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Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON

Vol. 38 No. 1 | January/February 2014

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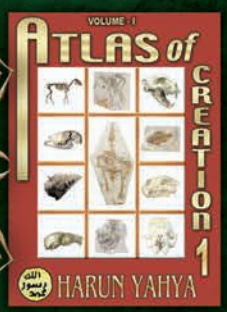
Harun Yahya's Global Publishing Empire



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[FROM THE EDITOR

Creationism Gone Global

"Darwinist ideology is based on the imposition of a preconception on uninformed people." So begins the foreword to Volume 4 of Harun Yahya's *Atlas of Creation*. And it only gets worse after that. The "ideology" of evolution is based on "indoctrination" and "mass hypnosis." Evolution is a "false theory," "a spurious theory," "an obvious fraud" imposed on society through the "deception" of "world-famous scientists." And there's still more. "Darwinism" is a "falsehood" and a "grave danger." The theory of evolution "underlies the social problems and moral degeneration that oppresses and distresses people today." A dramatic color illustration visually equates it with nothing less than "Terror, Hatred, Racism, War, Lovelessness." Whew!

Atlas of Creation is not some obscure tract by a lonely, isolated creationist crank. It is a glossy, handsomely produced, and globally disseminated book (I easily found these parts online) designed to have the widest mass appeal. Muslims are among its target audience but then so is just about everyone else. It has been translated into sixty languages. Its publisher mailed the gigantic first tome, unsolicited and free, to science teachers and libraries throughout Europe and North America. And it is just one of two hundred books and 1,500 articles in English alone spewed out by the international publishing phenomenon bylined "Harun Yahya," a pen name for a Turkish writer and TV personality named Adnan Oktar (plus teams of writers and cut-and-pasters the world over who assemble and market these tracts). Despite their severe scholarly shortcomings, the books are widely read and, in large parts of the world, believed and respected.

In this issue, Stefano Bigliardi examines this vast antievolution publishing empire and the person behind it. And he explores the way it co-opts the popularity, appeal, and beautiful imagery of science to attack and undermine one of science's most well-supported and fruitful concepts, evolution. Although branded as Islamic creationism, the "Harun Yahya" product, Bigliardi finds, is "utterly postmodern," a "scientified religious discourse" that can be exploited by any religion and subscribed to by anti-Darwinists and conspiricists anywhere. Bigliardi wrote this article while a researcher and lecturer at the Center of Middle Eastern Studies at Lund University, Sweden. (In January he begins a philosophy teaching position in Mexico.)

* * *

Dean Radin is one of the few proponents of parapsychology today to have some appeal to educated readers. He wants to convince us of the existence of supernormal abilities. But in an article-length critique of Radin's new book, *Supernormal*, in this issue, Dale DeBakcsy laments Radin's tendency "to laud showy results over responsible ones," finds his misuse of statistical arguments maddening, and wonders, as a result, what in Radin's writings, if anything, can be trusted. Then biological scientist (and CSI Fellow) Elie A. Shneour considers the contentious question "When Does a Human Life Begin?"

And that's just the start of the riches you'll find in this issue.

—Kendrick Frazier

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Three Days of Science and Skepticism in Stockholm

Kendrick Frazier

It awards the Nobel Prizes in science and proudly portrays not a political figure but one of its most eminent scientists, botanist Carl von Linné (1707–1778), better known to the world as Linnaeus, the father of biological nomenclature, on its ubiquitous 100-kronor note (about $16). So it is hardly surprising that Sweden is the home of a large and vibrant skeptics group and was the able host of the 2013 European Skeptics Congress, August 23–25, in Stockholm.

The fifteenth in the series of biennial congresses created by the European Council of Skeptical Organizations (but first in Scandinavia), ESC 2013 featured speakers from ten countries and plenty of time for socializing and networking. Martin Rundkvist, P.J. Råsmark, and Elisabeth Rachlew of the Swedish Skeptics officiated and kept things running smoothly.

Most all the usual academic topics were covered, but there were also magicians and even Sweden's first astronaut, PhD physicist and CERN Fellow Christer Fuglesang of the European Space Agency, a veteran of two space missions to the International Space Station (including five spacewalks totaling nearly thirty-two hours), in 2006 and 2009. He proudly noted he has been a member of the Swedish Skeptics almost from their beginning in the early 1980s. In his lively presentation of phenomenal photos of Earth from space he included one of himself wearing an "Always Be Skeptical" T-shirt while peering down at Earth from the station.

Physician and statistician Hans Rosling (Karolinska Institute) and his son Ala Rosling jolted attendees' preconceptions from the start with their "fact-based worldview with animated data." Founders of the Gapminder Foundation, which develops the Trendalyzer software system for visualization of statistics, they took the audience through rapid-fire animated displays of world demographic trends. Much of what we think we know about world population trends is wrong, they told us, and then demonstrated, first using an instant electronic feedback system to take the audiences' answers to a series of questions and compare them with reality.

Today half of the world's population is in Asia and Africa, but by the year 2100 that figure will leap to 80 percent. "CEOs know this better than academics," said Hans, a bow to the practical value of modern demographic knowledge.

A dramatic new reality has set in. Whereas couples used to have on average of six children of whom four died, the new balance is now two kids per couple, with most of them surviving. This dramatic decline in babies born per woman is true of all religions and

Sweden is the home of a large and vibrant skeptics group and was the able host of the 2013 European Skeptics Congress, August 23–25, in Stockholm.

Dr. Christine de Jong (The Netherlands), Michael "Marsh" Marshall (United Kingdom), Kendrick Frazier (United States), Shane Greenup (Australia), and moderator and conference chairman Martin Rundkvist (Sweden) at a panel on journalism and critical thinking at the 15th European Skeptics Congress, Stockholm. Photo by Olie Kjellin.

regions. Europe just started doing it earlier. As a result, world population will continue rising but not at the steep rate predicted three or four decades ago.

And so it went.

Max Maven, the mentalist and illusionist, gave both a lecture where he praised *some* deception ("art is a beautiful deception") and later a two-hour evening performance. Even our audience of skeptics found ourselves repeatedly mystified (but with no implication of paranormality)—a good lesson for everyone.

Psychologist Tomasz Witkowski (Poland), familiar to our readers from several recent pieces in SI, gave a nuanced talk addressing the question of whether the social sciences are what Richard Feynman called a "cargo cult science."

Kristine Hjustad (Norway), a medical student and PhD candidate (and also a performer of theatrical magic), performed knot-tying and other illusions to demonstrate how we are fooled and how we interpret our perceptions, add meaning to them, and simplify them, usually without realizing it. "Our brain is in control. It decides."

Magician Tom Stone (Sweden) continued that theme. He showed and then patiently explained some of the psychological and perceptual principles behind creating some illusions. "So now you won't be fooled," he added wryly. He then performed them once more, and fooled everyone again.

Neuroscientist Beatrice Mautino of Italy's CICAP skeptics group emphasized the value of solving mysteries to learn science (and vice versa). She said skeptical investigation can kill three birds at once when it not only solves a mystery but explains some scientific facts (like the physics of firewalking) . . . and then goes on to tell something about how science works. Hands-on activities are especially productive. CICAP takes people out to make their own crop circles (they start with thirty-meter-diameter circles) or test "the blood of San Januarius" or lie on a bed of nails. As for assertions about an Apollo landing hoax, she and her colleagues go through the evidence for that, and then ask people to investigate and test the claims themselves. This seems to be an effective strategy.

Shane Greenup (Australia) reinforced that theme. Instead of telling people they are wrong, he urges leading them to question the belief using the Internet to find the right information. And that right information could come via his Rbutr.com software. You install Rbutr on your browser and it finds rebuttals to extraordinary claims. Skeptics can establish a link from any web page making a claim to the rebuttals of their choice.

As journalistic organizations cut costs and staff, they do less real reporting. Michael "Marsh" Marshall (United Kingdom), who writes about the role of PR in modern media, warned against a spreading practice he calls "churnalism"—printing press releases as news. A particularly popular new practice is publishing what are essentially advertisements hidden as "research" based on online polls. Companies sponsor simple online polls, paying people to fill out what he calls "B.S." surveys filled with dodgy and leading questions and all calculated to lead to some favorable view about the particular business—say preferences about travel or fashion. He has a "fourth paragraph rule"—if a company name appears around the fourth paragraph, there is a strong chance it paid for the article. London's tabloid *Daily Mail*, the biggest newspaper in Britain, is notorious for this, he said. It runs these paid surveys in almost every issue, and "They'll put out anything to get attention."

Psychologist Tomasz Witkowski (Poland), familiar to our readers from several recent pieces in SI, gave a nuanced talk addressing the question of whether the social sciences are what Richard Feynman called a "cargo cult science." Witkowski has his criticisms of social science—too much of it deals with unimportant topics and its surveys often use students and other biased samples. But he ultimately came down in defense of the social sciences, which he said have great hidden potential. One example is the research that showed that adding a third brake light on the rear of vehicles would drastically reduce accidents and injuries, or that emergency vehicles should be painted lime green to be most easily seen—practices, along with many advances in passenger airline safety, that have now been widely adopted and save lives.

Dr. Catherine de Jong (Netherlands), an anesthesiologist, addiction researcher, and president of the Dutch Society Against Quackery, described pseudoscientific addiction treatments that contradict treatments based on science. These questionable treatments include the Prometa protocol, disulfiram injections, and ibogaine. The latter is described as "a naturally occurring psychoactive substance found in plants in West Africa," and many wrongly infer that since it is natural it is safe. Ibocaine carries a high risk of heart arrhythmias and death,

and it has been forbidden in the USA. Some of these addiction treatments claim FDA approval (but any approvals are not for addiction treatment) or "almost 100 percent success" or offer a dubious hypothesis about the working mechanism. Good science, better cooperation among health authorities, and investigative journalism all can help get rid of such pseudoscientific treatments.

Anna Bäsén gave many examples of such investigative journalism. A medical reporter for a leading Swedish daily newspaper, she specializes in undercover health journalism, going undercover to nursing homes or alternative medical practitioners (such as a health coach who claimed you can cure deadly viruses with positive thinking) or psychics (she got a cold reading of "one of my not-real dead relatives") and then simply reporting what they say. Undercover medical journalism shouldn't be used recklessly, Bäsén says, but "I also get upset when people get ripped off." Her published exposés have put some of these people out of business.

Science teacher Dénis Caroti (France) described teaching about intellectual self-delusion in France (where the word *zetetics* rather than *skepticism* is used to avoid negative connotations of the latter). He touted physicist and CSI Fellow Henri Broch's Laboratory of Zetetics at the University of Nice, Sophia, where critical thinking is an official skill to be acquired by students.

On the final morning, Chris French (United Kingdom) gave a survey of anomalistic psychology (also the title of his new book), Hayley Stevens (United Kingdom) described some of her experiences as a skeptical ghost hunter, and I ended the conference with a talk on "Why We Do This: The Higher Values of Skeptical Inquiry" (published in the November/December 2013 Skeptical Inquirer).

There was more, a lot more, but you get the idea. For three days in Stockholm science and skepticism were *the* central theme of stimulating intellectual discussion and exchange. Young skeptics were everywhere and lent vigor and freshness. And until there is a Nobel Prize in science-based skepticism or a distinguished skeptic makes it onto some nation's currency, that will just have to do. ■

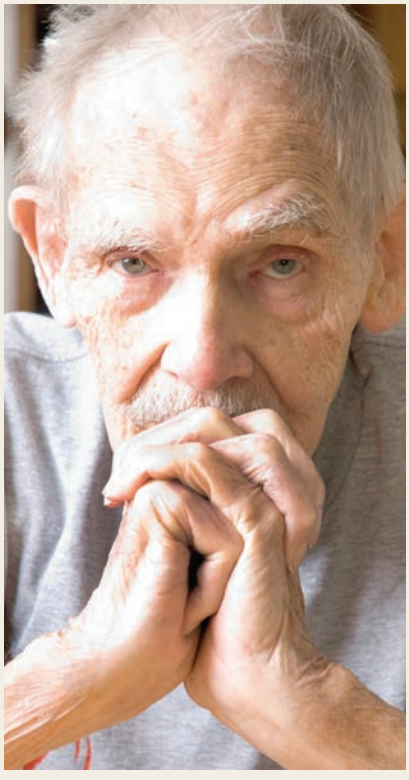
Kendrick Frazier is editor of the Skeptical Inquirer.

Frederik Pohl (1919–2013), Science Fiction Great and Skeptic

Frederik Pohl, one of the great science fiction writers who began their writing careers in the 1930s and 1940s, died September 2, 2013, at the age of ninety-three. He wrote more than sixty-five novels (his *The Space Merchants* sold millions worldwide) and some thirty short-story collections. Also a literary agent (he sold Isaac Asimov's first novel, *Pebble in the Sky*, to Doubleday in 1950) and editor, he edited *Galaxy* and *If* science fiction magazines. He had a good, self-taught knowledge of science and was elected a fellow of the American Association for the Advancement of Science in 1982. He won his last Hugo award in 2010.

Pohl was a longtime reader of the Skeptical Inquirer, and in March 1997 submitted a brief letter to the editor, published in our July/August 1997 issue. It may be worth recounting here:

> Yesterday morning I received a telephone call from a television producer in London. She was inviting me to appear on a "scientific" program for the BBC and, in America, the Discovery Channel. The subject, she said, would be the scientific basis for ESP and other psi phenomena.
>
> When I said I didn't think there was much, she asked if I was a skeptic. When I admitted I was, she withdrew the invitation.
>
> I used to think of the BBC and the Discovery Channel as ornaments to television broadcasting—but that was quite a while ago.
>
> Sincerely,
> Frederik Pohl



IPCC Science Report Says Warming of Climate 'Unequivocal,' Human Influence Dominant Cause

At seven-year intervals, the Intergovernmental Panel on Climate Change (IPCC) issues a major new assessment of the status of our climate. The Fifth Assessment Report is due out in early 2014. From a scientific viewpoint, the key input is that of Working Group I, "The Physical Science Basis." Climate scientists from dozens of countries brought together by the IPCC consider all the new peer-reviewed scientific evidence of climate change—from the record of worldwide observations (sea and land, satellite and surface), paleoclimate data, theoretical studies, and simulations.

That working group's widely awaited contribution to IPCC's Fifth Assessment Report was approved in Stockholm and released by the IPCC in Geneva September 27.

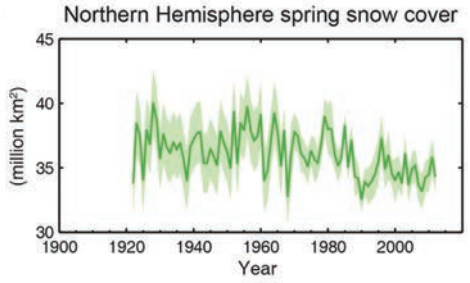
Here are six of its key conclusions:

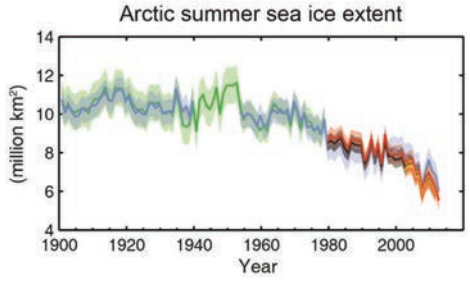
• Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased.

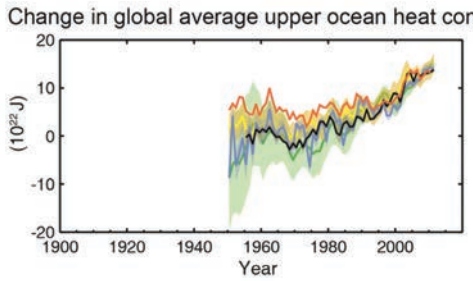
• Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. In the Northern Hemisphere, 1983–2012 was likely the warmest thirty-year period of the last 1,400 years.

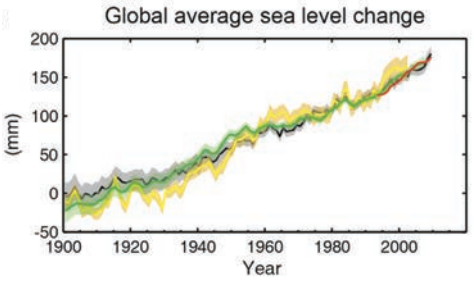
• Ocean warming dominates the increase in energy stored in the climate system, accounting for more than 90% of the energy accumulated between 1971 and 2010 (high confidence). It is virtually certain that the upper ocean (0–700 m) warmed from 1971 to 2010, and it likely warmed between the 1870s and 1971.

• Over the last two decades, the Greenland and Antarctic ice sheets have been losing mass, glaciers have continued to shrink almost worldwide, and Arctic sea ice and Northern Hemisphere spring snow cover have continued to decrease in extent (high confidence).

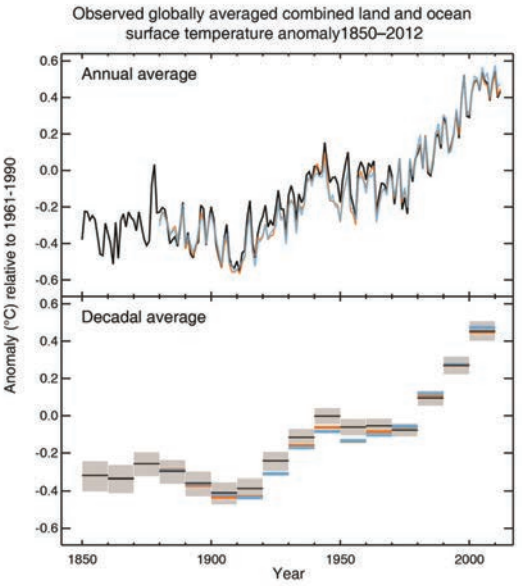


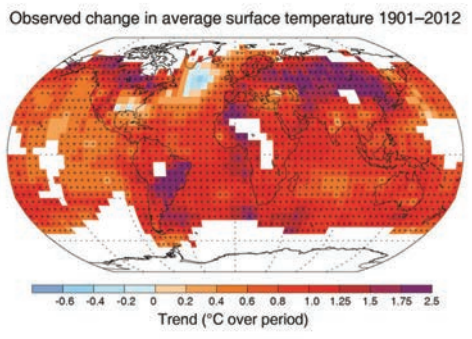






Figures from the report





- The atmospheric concentrations of carbon dioxide (CO_2), methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years. CO_2 concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions. The ocean has absorbed about 30% of the emitted anthropogenic carbon dioxide, causing ocean acidification.
- Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes. This evidence for human influence has grown since AR4 [Fourth Assessment Report, 2007]. It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.

"Observations of changes in the climate system are based on multiple lines of independent evidence," said Qin Dahe, cochair of IPCC Working Group I. Qin is a world-renowned glaciologist/climatologist, an Academician of the Chinese Academy of Sciences, and former head of the China Meteorological Administration in Beijing. "Our assessment of the science finds that the atmosphere and ocean have warmed, the amount of snow and ice has diminished, the global mean sea level has risen, and the concentrations of greenhouse gases have increased."

"Continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system," said William Stockton, professor of climate and environmental physics at the University of Bern, Switzerland, the other working group cochair. "Global surface temperature change for the end of the twenty-first century is projected to be likely to exceed 1.5°C relative to 1850 to 1900 in all but the lowest scenario considered, and likely to exceed 2°C for the two high scenarios. Heat waves are very likely to occur more frequently and last longer. As the Earth warms, we expect to see currently wet regions receiving more rainfall, and dry regions receiving less, although there will be exceptions."

The thirty-six page "summary for policymakers," including eleven pages of color figures (several shown on p.8), is available online at www.climatechange2013.org or www.ipcc.ch.

'Chemtrails' Activists Rally at Redding City Hall

The Mount Shasta area of northern California is known for its New Age devotees. Perhaps it's just a short step from New Age ideas to conspiracy theories. It sure seemed that way on the last Sunday in August 2013 when protesters gathered in front of the Redding City Hall to protest "geoengineering" with "chemtrails."

Most people know that the white streaky clouds in the sky following airliners are vapor trails (contrails), but to believers they are a sign of a deep and intentional conspiracy. (See "Curious Contrails: Death from the Sky?" Ben Radford, "Skeptical Inquiree" column, SI, March/April 2009.)

One woman, Kimberly Steele, of Redding, said what she considers the strange crisscrossing cloud patterns disturb the natural beauty and disturb her, too. "This is probably one of the most critical things people don't know about," she said.

Speakers touted their various theories on why they believe the government is spraying heavy metals such as

aluminum and cadmium from aircraft. At least one opined that it's part of an international effort to control the climate. "They're basically dong it without thinking about the harm they are doing us," said Christine Miller, who moved from Hawaii to Redding in 2005. "If you start to pay attention, you can start to recognize what's natural and what's not. . . . We aren't told the truth all the time about what they do."

The event was part of an international series of protests against chemtrails the same day. A few weeks earlier activists asked the Shasta County Board of Supervisors to look into the issue.

According to the *Redding Searchlight* newspaper (August 26) at least one man at the Redding event wasn't buying it. Steve Funk of Mount Shasta came wearing an "It's a Contrail" T-shirt to protest the protesters.

"It's something I do to be a good citizen," he said. "It kind of concerns me that people are so worried about this problem, [when] there's really no evidence it exists." He said he worries about believers taking seriously suggestions on the Internet to shoot these planes down. "I'm afraid someday there's going to be some nut with a military background and some connections, [who] carries through on that."

[Source: "Crowd at City Hall Decries 'Chemtrails,' *Redding-Searchlight*, August 26, sent in by reader Carolyn Munn.]

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On the Mythical Isle of 'Woo' with *Gua Sha* Spoon Therapy

Morton E. Tavel

"Woo" (sometimes called "woo woo") refers to ideas considered irrational, based on extremely flimsy evidence, or appealing to mysterious occult forces or powers.

According to the standard dictionary, this term is applied to emotions, mysticism, or spiritualism, outside of the bounds of science. It can also represent a person who harbors mystical beliefs. Medical science also recognizes woo as a synonym for pseudoscience or quackery. Basically it boils down to pure nonsense or irrationality.

Now let's apply woo to a real contemporary situation:

Are you tired of traditional medicine and its artificial restrictions on "natural healing"? Do you have a chronic pain or illness that needs to be fixed? Maybe you should have someone scrape your back with a kitchen spoon. But be sure to give it an Asian name so you can convince yourself that it's vaguely mystical. Yes, that's a bit of woo that, the *Washington Post* reported, is gaining in popularity.

Like massage therapists, *gua sha* practitioners palpate their patients to find areas that feel "tight." They then rub them with a spoon or similar tool until they turn red. "Essentially, you are scraping the restriction in their skin," one practitioner states. Scraping the restriction in their skin supposedly takes care of all those conditions that are "vibrating at a lower level" and helps restore "balance." (Whatever that's supposed to mean.)

According to its practitioners, where to scrape tight muscles is obvious; where to scrape for other ailments is decided by traditions that associate different organs with specific parts of the body. So the sky's the limit. Sound rigorous? Here's an actual example, as noted in the *Washington Post*:

A local business manager said he had had back pain for more than two decades. He tried *gua sha* the year before as part of a regimen that included massage, visits to a chiropractor, and "structural integration," another alternative therapy that manipulates the body's connective tissues.

Gua Sha as practiced in Bali, Indonesia.

He estimates that he received *gua sha* about five times in one month.

"I'm skeptical of a lot of stuff," he said. "I'll try whatever, but in the end I'm like, 'Why would this work?'" But he was pleasantly surprised.

In photos taken after the first treatment, this individual's back looked as though he had fallen backward into a pool off a high diving board: The skin was totally red, with scrapes and welts showing, especially in areas where he had complained of tingling that he felt was caused by "poor circulation and muscle stiffness."

After a few days, the redness faded. Photos taken after subsequent treatments made his back look less painful. "As you break up restrictions, you get less of the reaction," said his "therapist," who compares *gua sha* to taking a crayon impression of a leaf on wax paper. Just as the toughest parts of the leaf are darkest on the wax paper, the most constricted muscles turn the deepest red during scraping. When trying to figure out where to apply pressure, he says, "It shows you itself."

So why does this "treatment" seem to work? The answer is quite simple: The placebo effect. This effect is ubiquitous and can explain identical "cure" rates stemming from other similar forms of "treatment" such as magnetic therapy, reflexology, acupuncture, faith healing, and many others. The placebo effect is most powerful when there is physical contact (such as laying on of hands) by the practitioner, supported by expectations of success, usually combined with elaborate and convoluted rituals and explanations. Aiding this effect is the natural tendency of all maladies to fluctuate or spontaneously resolve; thus any type of intervention that precedes an improvement stands to receive the unearned credit for "success."

Morton E. Tavel, MD, is clinical professor of medicine, Indiana University School of Medicine, Indianapolis. He is author of *Snake Oil is Alive and Well. The Clash between Myths and Reality. Reflections of a Physician* (Brighton Press, 2012).

Reduce Greenhouse Emissions *and* Make a Profit: My Forty-Year Focus on Climate Change

THOMAS R. CASTEN

In 1975, Cummins Engine executives asked me to look at the twenty-five-year future and then suggest the major problems that a multinational manufacturing company would face over that period. One year into the analysis, I identified population growth as the major problem and thought that climate change would be the next most important issue. In 1975, the rate of fossil fuel combustion was such that we were releasing an amount of carbon into the atmosphere every year that nature had taken about one million years to store. Furthermore, various pundits estimated that 1975 fossil fuel consumption levels would burn all estimated fossil fuel in 400 years.

My second major conclusion was that climate change mitigation would require solutions that *profitably* reduced CO_2 emissions, since the world's governments would not collectively enact and enforce economically punitive measures. That conclusion informed my entire career. Since 1977, I have founded and managed several companies with a mission of profitably reducing greenhouse gas emissions by capturing energy that is normally wasted and turning it into clean electricity and heat. Now seventy-one, I am more engaged than ever (although my son Sean is now the CEO), and I continue to see mitigating climate change as a major economic opportunity for entrepreneurs and for society.

However, today, the world fossil fuel burn is more than double the 1975 rate, and atmospheric concentrations of CO_2 continue to rise.

My experience suggests a contrarian view on the climate change debate that may be worth sharing with my fellow skeptics, including those of you skeptical of climate science. You may have a sign error in your assumptions about the cost (benefit) of reducing carbon dioxide emissions.

My experience suggests a contrarian view on the climate change debate that may be worth sharing with my fellow skeptics, including those of you skeptical of climate science.

My colleagues have been involved in nearly 300 waste energy-recycling projects involving $2 billion of total investment, and nearly all continue operating. These projects generate 11,000 megawatts of heat and power and avoid 5 million tons of CO_2 per year, and they reduce manufacturing costs. The projects collectively save the host companies $50 to $100 million per year, after returns to investors and lenders. In other words, these projects cut manufacturing costs by $10 to $20 per ton of avoided CO_2 emissions, after repayment of capital.

By contrast, nearly everyone assumes the opposite, namely that any requirement to reduce CO_2 emissions will increase the costs of energy services and cut our standard of living. Few seem to realize that it costs a great deal to buy fossil fuel and then waste the energy, leaving nothing behind but carbon dioxide. I suspect people assume the system of generating and delivering electricity and thermal energy is economically optimal, in which case reducing CO_2 emissions would make the system less efficient and thus more expensive. But the energy system is far from optimal; it is full of needless waste.

Consider the logic of assumed energy system optimality. Economic theory says that in a free market, an invisible hand will drive self-interested producers to optimal production of goods and services. Let us stipulate the theory is correct, consistent with our observation of continuous improvement of most production. Then consider the free market conditions required for this invisible hand to function. To be free, markets require a set of characteristics, including:

• Freedom of entry. (Prohibited in electric by utility monopoly franchises.)
• Freedom of exit, i.e., freedom to fail. (Regulatory commissions typically do not allow utilities to fail.)
• Accurate price signals. (Energy is heavily subsidized all over the world, which hides the real costs and thus suppresses investments in efficiency and encourages over consumption.)
• Costs that include the costs of externalities imposed by production. (The National Academy of Sciences found an average of $32 of societal cost per ton of coal burned from health and environmental damage, roughly equal to the cost of a ton of coal, but this cost does not show up in the price of coal.)

In other words, obsolete regulations control the market for generating and delivering heat and power, thus crippling the invisible hand.

A true free market for energy would unleash the invisible hand, and efficiency could double over the next two decades. Competition would find economically optimal solutions, using some mix of emission controls, greater efficiency, and renewable technologies. Forcing electricity and thermal generation to bear their true cost would drive competitors to substitute human and financial resources for fossil fuel, all while reducing the price of energy services.

To appreciate the opportunity, consider the stagnant history of the electric industry. In 1960, the industry burned 100 units of fuel to deliver 33 units of electricity, and threw away 67 units as waste heat. Five decades later, the system is inching toward delivering 34 units of electricity for every 100 units of fuel. This defines stagnation. Can you think of any other industry that continues to operate at 1960's efficiency?

I suspect that the mistaken assumption of energy generation optimality colors how people view climate change evidence. As humans, we try to avoid unpleasant conclusions by questioning the evidence. The tobacco industry understood this human foible and caused untold health problems. Now the fossil fuel industry follows the same playbook, spending heavily to discredit climate science. Sadly, these commercially driven efforts to discredit specific science end up discrediting all science, effectively "dumbing down" the American population.

A true free market for energy would unleash the invisible hand, and efficiency could double over the next two decades.

Climate "skeptics" or contrarians cite the fossil industry funded studies as evidence against human-induced climate change and then dismiss the obvious bias, asserting that all scientists are biased. I accept that we all have biases, but the scientific method largely counters biases. Science demands replication of results by others. Science keeps all conclusions open to challenge from further evidence. Science demands peer-reviewed analysis, and there is an incredibly active competition for ideas and ownership of ideas. By contrast, those denying anthropomorphic climate change largely work outside the scientific process. Companies with stakes in fossil fuel sales fund these authors, and the authors largely refuse to submit their papers to peer-reviewed journals. Wealthy libertarians see climate change mitigation as an excuse for big government and join the effort to discredit mainstream science.

However, the evidence mounts that global warming is changing the planet faster than the scientific predictions. Science has a natural bias for under-claiming, since peer review will attack all but the most robust logic. The IPCC consensus process adds further conservatism. We see global warming impacts consistently exceeding the impacts predicted ten to twenty years prior. Glacial melting, rising ocean temperatures and sea levels, thawing of polar ice, frequency and intensity of storms, and the percentage of Earth's surface impacted by 3-sigma weather events are largely exceeding earlier predictions.

I stay focused on proving that reducing greenhouse gas emissions will also reduce the true costs of energy services. We are convinced the pace of innovation will quicken as soon as governments modernize obsolete rules and regulations to eliminate the barriers to efficiency. Our experience suggests that climate change mitigation is an opportunity, just waiting for better governance. This makes climate change mitigation an opportunity for politicians as well. Eliminating the barriers to efficiency and market actors, seeking personal profit, will capture waste energy, thus reducing the cost of energy services *and*, as a byproduct, decrease greenhouse gas emissions. That would be good for all of us . . . and for our climate. ■

Thomas R. Casten is founder and chair of Recycled Energy Development, LLC, Westmont, Illinois, and author of *Turning Off the Heat: Why America Must Double Energy Efficiency to Save Money and Reduce Global Warming* (Prometheus Books, 1998). He is a Fellow of the Committee for Skeptical Inquiry and a former member of its Executive Council, as well as a former member of the Center for Inquiry board.

Problems with Modern Medicine: Too Much Emphasis on Disease, Not Enough on Managing Risk

MACIEJ ZATONSKI

I am a doctor. A surgeon. I was taught to make sick people healthy and to make those who cannot be cured comfortable. I am lucky also. Major advances have benefited us all. We have learned how to put people to sleep during surgery; we have developed antibiotics to battle bacteria; we have started to transplant organs from the deceased. We have created technology that allows us to look into a living body and even observe metabolic processes on the cellular level in real-time. We developed effective vaccinations and prevented millions from dying in accidents, from strokes, or from complications of chronic diseases. We have used modern scientific methods to analyze huge amounts of data, and we have managed to change the perception of medicine as a form of art and turn it into a hard science.

But it all happened at a price.

Nowadays we try to improve our past discoveries, but we probably will need to wait for another breakthrough. In the meanwhile, our old discoveries are becoming available to increasingly larger numbers of people. And the more people we diagnose, the more diseases we find. But are doctors still making sick people healthy? Our definition of sickness and health is evolving, but does not seem to catch up with current medical advances. We can detect cancers before they give us any symptoms. We scan, screen, and diagnose more and more individuals using the most advanced technology. But are we always helping our patients? Who actually benefits from early treatments? How many suffer from complications? How many are harmed, physically or emotionally? These are hard questions to answer, and we are looking into them.

We know that every advanced disease (cancer, for example) had to have a very early stage. It can start as a single mutation in our DNA. Historically, we were not able to pick those things early enough. The tumor had to be of a size that would be detectable with our fingers or eyes—and it often meant that it was too late for a cure. We have learned to look inside our bodies to identify tiny lumps that are invisible to the eye and impossible to feel or touch. Later came newer technologies that allowed us to spot abnormalities in tissues, cells, and even on the molecular level. We thought that this was good, because every advanced disease had to start early. And the earlier we pick it up, the better the chances of survival.

Medicine today is not only about making sick people healthy. It is becoming a risk-management and quality-of-life improvement service.

Well, it is true to some degree. The problem is that we do not know if every detected pathology will become a real problem. Not all abnormalities develop into symptomatic diseases. We don't know which of them will. And we probably never will, as an attempt to investigate this issue would raise severe ethical issues.

Medicine today is not only about making sick people healthy. It is becoming a risk-management and quality-of-life improvement service. We need to needlessly treat hundreds of people with a mild hypertension to prevent a single death. Since not all people with hypertension die from its consequences, we have to treat a lot of people for one person to actually benefit. We don't know who this lucky person will be. It's like a lottery—lots of people have to play the game, so we can have one winner. Therefore we treat everyone's "abnormal" findings. And this would be totally okay if there were no side effects from the treatment. If you play in a lottery you might lose just a few dollars. If you play with your life, the price to pay can be much higher.

The closer we look, the more "diseases" we find. Recently National Health Service in the U.K. announced a nationwide "Health Check" program, where healthy people are encouraged to visit their doctors. Some lives will be saved. But how many people will be turned needlessly into patients? We don't know exactly, but the estimations are alarming.

It was easier to trust the doctors when we could see the results of their treatment immediately. But when doctors manage risks of possible (but not at all guaranteed) future problems, this undermines patients' trust in modern medicine. Treatments are often expensive and can make previously healthy people feel sick—both physically (from side effects) and psychologically (due to their changed perception of their own health).

Doctors don't give advice to their patients anymore. They give them options. We are told that this is good: it respects patients' autonomy, beliefs, and expectations. But it also takes a lot of responsibility away from doctors and leaves the decision regarding the treatment in the hands of the least qualified person. It's a part of the phenomenon called "defensive medicine." Doctors will always put their safety (and the financial safety of their families) first. This allows charlatans to thrive. Think about it: if you only prescribe sugar pills (such as homeopathy)—you can actually give any advice to your clients without putting yourself at risk, as each piece of advice is technically identical and risk-free. It's easy to actually advise a patient to take sugar pills, instead of presenting him or her with treatments, statistics, and decisions to make. If I knew enough to make a proper therapeutic decision, would I need to consult a doctor in the first place?

Don't get me wrong; I am not saying that the idea of offering a choice and providing information to patients is wrong. It's the best way we know. However, this great idea is flawed: after years of practicing medicine I would struggle to make a "good" decision myself. And if it's our life at stake, we tend to make irrational choices. There is a reason why many doctors admit that they would never consider treatments for themselves that they offer their patients. It is a complicated problem that might be impossible to solve in current legal and ethical realities.

Perhaps instead of battling homeopaths it would be better to educate patients and doctors about the concept of medical risk-management (in the mathematical meaning). Understanding of statistics is poor among doctors and the general public—but in a world flooded with big data, basics of statistics (and its implications) should be a mandatory part of every primary school curriculum.

Are our expectations of modern medicine too high? We don't have a cure for loneliness, feeling down, lack of hope, or rejection. We don't even have a cure for most common diseases. We can "manage" certain conditions, reduce risks, prolong life. But we still cannot cure many illnesses. But neither can the "alternative medicine" shamans.

My impression is that we need to redefine our conception and definition of health and disease and introduce the concept of "risk-management of possible future health benefits." Perhaps skeptics can actually make a difference and lead the world into the changes that modern medicine needs. I invite the readers to share their ideas and opinions. ■

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[INVESTIGATIVE FILES JOE NICKELL

Joe Nickell, PhD, is CSI's senior research fellow. His doctoral work included folklore, and his dissertation was *Literary Investigation: Texts, Sources, and "Factual" Substructs of Literature and Interpretation*. He is the author of numerous books, including *The Science of Ghosts*.

The 'Bell Witch' Poltergeist

Called "America's best-known poltergeist case," Tennessee's sensational "Bell Witch" affair of ca. 1817–1821 has gone unexplained, it is said, for two centuries ("The Bell Witch" 2006). Its most vocal proponent has called it "the greatest mystery and wonder that the world has any account of," claiming it even surpasses the disturbances of the Epworth rectory poltergeist (Ingram 1894, 75–77, 315). (That was an early eighteenth-century case involving the Wesley family, among the children of which was the future founder of Methodism, John Wesley [Guiley 2000, 122–124]).

Dismissers and debunkers on the other hand (e.g., Hendrix 2006)—some of whom do not even list the story's most essential text in their references—insist that most or all of the events never happened. What does an extensive investigation show?

The Witch Appears

The primary narrative of the Bell Witch is "Our Family Trouble," reportedly compiled by Richard Williams Bell (1811–1857) in 1846. It tells how Bell's father, John Bell (1750–1820), having settled his family on a farm in Robertson County, Tennessee (Figure 1), was plagued by what would today be called poltergeist phenomena, beginning in about 1817. The Bell account was later greatly supplemented by a Clarksville newspaperman, M.V. Ingram (1832–1909), in 1894.

Briefly, the events began with mysterious knocks at the door and other rapping sounds, and soon included sleeping children having their hair pulled and bedcovers thrown off. Indeed, "Some new performance was added nearly every night, and it troubled Elizabeth more than any one else" (Bell 1846, 106). Elizabeth, or "Betsy" (who was twelve when the antics began), was sent to stay with various neighbors, "but," says Bell (110), "it made no difference, the trouble followed her with the same severity." The apparent spirit began to answer questions, first by means of the rapping sounds; then it began to speak—first in whispers, then in a feeble voice. As the voice gained strength, those who suspected Betsy of trickery accused her of ventriloquism (much as in the case of the Enfield Poltergeist, in which such deception was effectively discovered [Nickell 2012a]).

The Lost Treasure

Nevertheless, the Bell Witch went on to speak quite distinctly. As the story continues, after a skull and other bones were found to have been taken from an old grave nearby, the witch avowed herself the spirit of an early immigrant who had hidden his "treasure" for safekeeping. After certain pledges were made and urgency implored, "lest the secret should get out," the location was specified as under a "great stone" near a spring at "the southwest corner" of the farm. Soon a group of men set to work at the site and eventually raised the stone. Finding no treasure, however, they continued digging until they had opened a hole about "six feet square and nearly as many feet deep." Still they found nothing and were later mocked by the witch for being so easily fooled. Bell's narrative continues through other adventures of the witch, including attacks on old John Bell himself. In one curious incident he had first one shoe jerked off, then, when it was replaced, the other flew off. The narrative culminates in his death—with suggestions that he was poisoned.

Secrets Revealed

Now, this rather implausible, seemingly pointless account takes on real significance if it is seen as representing—with a knowing wink from those in on the meaning—important tenets of Freemasonry. Mystic Arthur Edward Waite in his authoritative *A New Encyclopedia of Freemasonry* (1970, 1:366), defines Masonry as "a system of morality veiled in allegory and illustrated by symbols." (An *allegory* is an extended metaphor in which its components carry one or more meanings in addition to the seemingly literal one; a *symbol* is something that stands for something else.) Waite (1970, 1:367) stresses that in Masonic stories and rituals, "the significance is in the allegory which may lie behind it."

Among its deepest spiritual concerns, Masonry focuses on the Mys-

tery of Death, whereby "the Mason is taught how to die" (Waite 1970, 1:174), utilizing symbols such as the skull and the grave. Masonry's Secret Vault symbolism pertains to the grave, buried treasure, and lost secrets—secrets that in the end *remain* lost (see Lester 1977, 181; Nickell 2001, 219–234). Much of Masonic symbolism is based on the stonemason's trade, and the Rough Ashlar—a stone in its original form—symbolizes man's natural state of ignorance (Mackey 1975, 320). Masonic rituals focus on the death of Hiram, master mason and architect of Solomon's temple (1 Kings 7:13, 40), whose allegorical grave measured 6'x6'x6'—the cube in Masonry being a symbol of truth. (Significantly, in Bell's account of the treasure search, the cube is not quite completed [120].) In Masonry, Hiram's name is Hiram Abif, whose legend—including his murder—represents "the dogma of the immortality of the soul" (Mackey 1975, 339).

The Bell Witch treasure tale seems rife with Masonic symbolism. The location of the treasure at "the southwest corner" of the farm corresponds to "the South-West corner" of the Masonic Lodge. This is one of the four stations that the "hoodwinked" (blindfolded) initiate is ritualistically conducted to in the second, or Fellow Craft degree (in a search for light), being opposite to the starting and ending point (Lester 1977, 91). Near the end of "Our Family Troubles," the most peculiar incident in which old John Bell has first one then the other of his shoes pulled off, presumably by the witch (176), surely invokes the Masonic Rite of Discalceation—from the Latin *discalceare*, to pluck off one's shoes. One does this when approaching a consecrated place (Mackey 1975, 125–129; Lester 1977, 40–41). In the Bell narrative, the pledges the men make and their agreement to maintain secrecy evoke the Masonic society's penchant for secrecy. So does the section "The Mysterious Hand Shaking" (in which people purport to shake hands with the witch), suggesting the Masons' secret handshake (Morgan 1827, 105–110). At one point "Bell" (107) speaks of receiving "a sudden jerk, which raised me," indicating the Masonic ceremony of being *raised* (to Master Mason status) in which, at one point, the candidate is "suddenly jerked backward" (Lester 1977, 163). And so on. References in the Bell narrative to "signs" (170), knocks at the door (104), "mauls" (159), and many more, also have their counterparts in the secret symbols, rituals, and language of Freemasonry (Lester 1977, 22, 47, 143).

Figure 1. Joe Nickell explores a "haunted" cave on the historic Bell Witch property in northern Tennessee. (Author's photo by Vaughn Rees.)

Questioned Authorship

I find the parallels (e.g., the size and cubical shape of the vault) to be too many and too specific for coincidence. Moreover, there are additional apparent Masonic allusions in the portions of the story later penned by Ingram, into which Bell's "Our Family Trouble" is sandwiched. Ingram was a longstanding Freemason who was buried in 1909 "under Masonic auspices" ("Obituary" 1909). Indeed, the evidence indicates Ingram actually wrote the narrative attributed to Bell!

The alleged Bell manuscript has no proven existence before about 1891, and, so far as we know, is today nowhere available to be examined as to its paper, ink, and handwriting. It appears to exist only as *a text*—and that written by Ingram.

First of all, the "Bell" narrative—which was purportedly expanded from a "diary" as well as supplemented "from memory" in 1846, but pretends to describe events decades earlier—contains apparent anachronisms. For example, it seems written in the context of modern spiritualism—which did not flourish until the decades after 1848 when the Fox Sisters sparked new interest in supposed spirit communication (Nickell 2001, 194).

Also the frequent references to private detectives—as in "a professional detective" and "the detective business" (Bell 1846, 143, 144)—are anachronistic for 1817–1821 given that the word *detective* did not originate until about 1840 and then in England as an adjective, and the earliest known use of the *noun* in America appears to be

1853. About that time Allan Pinkerton created the country's first agency of private detectives (Nickell 2013). Of course these indications are highly suggestive that the "Bell" narrative is of much later vintage, consistent with authorship by Ingram.

Ingram as 'Bell'

Moreover, "Bell" and Ingram often use the same distinctive expressions—both, for example, referring to the events as "high carnivals" (Bell 1846, 132; Ingram 1894, 34). "Bell" refers to the occurrences as representing "the greatest of all secrets" and "the great mystery" (1846, 130–131, 185), and Ingram calls it "this greatest of all mysteries" and "the greatest mystery and wonder that the world has any account of" (1894, 6, 315). Both refer to one's facial features as "physiognomy" and characterize old John Bell in the same words—the "Bell" text saying he "was always forehanded, paid as he went" (1846, 102), and Ingram writing, "He paid as he went. . . . He was always forehanded" (1894, 37). It could be argued that Ingram was simply influenced by Bell, but Ingram uses "forehanded" elsewhere (1894, 62), and there are many more stylistic similarities, as we shall see.

Both "Bell" and Ingram use *multi-page* paragraphs (e.g., Bell 1846, 104–112; Ingram 1894, 38–43). Also, both texts contain sentences of over a hundred words (Bell 1846, 143–144; Ingram 1894, 206). Although Bell was a farmer, the text attributed to him is rife with learned words (like *personation*, *declamation*, *vociferator*, *beneficience*, and *felicity* [Bell 1846, 122, 126, 127]), just like writer Ingram's (e.g., *lodgement*, *unregenerated*, *indomitable*, *mordacity*, and *alacrity* [Ingram 1894, 10, 4, 35, 189, 213]).

The "Bell" text frequently promotes the Bible and Christianity (1846, e.g., 121–123, 126, 173, 178), as does Ingram's writing (1894, 19, 33–34, 36, 43, 86–87). Both use literary allusions, with "Bell" (1846, 171) citing evil spirits driven "out of the man into the swine" (See Mark: 5–13), and Ingram (1894, 67) referring to a spirit "from the vasty deep" (an allusion to Shakespeare's Henry IV Part I [III. 1. 52]). "Bell," in wondering at length, regarding old John Bell, "if there was any hidden or unknown cause why he should have thus suffered" (1846, 173), evokes the Book of Job (e.g., Job 10:2–18), and Ingram's imperative to "observe the warning on the wall, whether it be written by the hand of the spectre, or indicted by the finger of conscience" (1894, 101), clearly alludes to Belshazzar's feast and the famous story of the handwriting on the wall (Daniel 5). And there are additional literary elements.

Although Bell was a farmer, the text attributed to him is rife with learned words (like *personation, declamation, vociferator, beneficience,* and *felicity*).

Applying to samples of both texts a standard "readability formula" (based on the average length of independent clauses together with the number of words of three or more syllables [Bovée and Thill 1989, 126]) shows that "Bell" and Ingram had comparable reading levels. These were respectively 14.3 and 14.4, indicating the number of years' education required to read the passage easily—and presumably to write it. The levels, which are close, are high, placing each at the sophomore level of college. This is not surprising for writer Ingram, but for rural farmer Bell it would seem unlikely (although Ingram says he was "cultured" [1894, 43]), adding to the inference that Ingram could have written "Bell."

Some shared writing features are also consistent with single authorship of both texts. For instance both occasionally use *myself* for *I* (Bell 1846, 149, 150; Ingram 1894, 14), and *that* for *who* (Bell 1846, 117; Ingram 1894, 82). Also, both are sometimes guilty of comma-splicing (Bell 1846, 139, 145; Ingram 1894, 193, 196), and incorrect use of the question mark (Bell 1846, 126; Ingram 1894, 32) as well as the semicolon (Bell 1846, 144, 171; Ingram 1894, 37, 187). And both sometimes commit subject-verb agreement errors (Bell 1846, 156; Ingram 1894, 189, 190).

Given all of these similarities between the texts, in addition to the other evidence, I have little hesitation in concluding that Ingram was the author of "Bell."

Folklore vs. Fakelore

This does not mean that the entire Bell Witch story is bogus, but it does warn that its central source may be largely fiction. Unfortunately, some other sources given by Ingram are also doubtful. For example, he claims that *The Saturday Evening Post* published a lengthy account of the case "about 1849" (Ingram 1894, 218), but an online search by CFI Director of Libraries Tim Binga failed to turn up any such article in 1849 (issues for which are complete) or indeed the 1840–1860 period (although there are some missing issues). A colorful account of General Andrew Jackson having paid a visit to the Bell farm at the time of the alleged incidents, told by a Tennessee lawyer (Ingram 1894, 229–238), lacks support from any known historical source. (Jackson was a prominent Freemason ["Masonic" 2013].)

Although some have claimed the story to be at once a "legend" (folklore) and a work of complete "fiction" (fakelore) by Ingram (a contradiction

in terms[1]), the basic story does actually predate Ingram's 1894 book by several years. Its outlines are given in Goodspeed's *History of Tennessee* (1886):

> A remarkable occurrence, which attracted wide-spread interest, was connected with the family of John Bell, who settled near what is now Adams Station about 1804. So great was the excitement that people came from hundreds of miles around to witness the manifestations of what was popularly known as the "Bell Witch." This witch was supposed to be some spiritual being having the voice and attributes of a woman. It was invisible to the eye, yet it would hold conversation and even shake hands with certain individuals. The freaks it performed were wonderful and seemingly designed to annoy the family. It would take the sugar from the bowls, spill the milk, take the quilts from beds, slap and pinch the children, and then laugh at the discomfiture of its victims. At first it was supposed to be a good spirit, but its subsequent acts, together with the curses with which it supplemented its remarks, proved the contrary. . . .

In two chapters of his book titled "Recollections and Testimonials," Ingram presents the statements of numerous "Citizens Whose Statements Authenticate the History of the Bell Witch." Unfortunately, many of those attesting—including forty-three signers from Cedar Hill—are only stating that several men mentioned by Ingram were early settlers and "trustworthy"; their collective statement makes no mention of the Bell Witch claims (1894, 292–293).

However, several other persons, writing in 1891–1894—including Charles W. Tyler, Mahala Darden, Rev. James G. Byrns, Nancy Ayers, Joshua W. Featherston, R.H. Pickering, John A. Gunn, Zopher Smith, James I. Holman, W.H. Gardner, and A.E. Gardner—all claim to have heard stories about the Bell Witch directly from reliable persons since deceased (Ingram 1894, 251–308). At least one, John A. Gunn, makes clear that he has recently seen the alleged Richard Williams Bell manuscript, "Our Family Trouble," and that he had heard his father, both grandfathers, and others relate incidents that confirm the general accuracy of the manuscript. (This rather suggests that newspaperman Ingram sent advance *printed copies* to persons from whom he was soliciting testimonials, and thus no doubt influenced their memories.) It does seem unlikely that Ingram would have fabricated the testimonials of so many persons still living, or that they would have knowingly endorsed a deception.

Conclusions

If, therefore, as some evidence indicates, there were indeed some poltergeist-like incidents at the Bell farm—beginning about 1817 and mostly ending soon after the death of Betsy's father, John Bell, in 1820—it is still difficult to say exactly what occurred and therefore how to explain the events.[2]

Fortunately, skeptics do not have the burden to disprove that for which there is uncertain evidence. As best we can tell from the secondhand accounts of those still alive when Ingram composed his fictionalized, allegorical text in 1894, the events centered around Betsy Bell. Indeed, Ingram (1894, 247) admits that many of Betsy's contemporaries suspected her at the time, "charging her with the authorship of the mystery." This is also stated by others who provided alleged information to him, including Lucinda E. Rawls and Mahala Darden (Ingram 1894, 238–240, 261).

As with other "poltergeist" cases, the Bell Witch story sounds suspiciously like an example of "the poltergeist-faking syndrome" in which someone, typically a child, causes the mischief (Nickell 2012b, 331). As the term suggests, while science has never confirmed a single poltergeist, again and again cases occur in which such phenomena are faked by the disturbed or immature. ■

Acknowledgments

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Notes

1. A legend is "a traditional tale believed to have a historical basis" (Axelrod and Oster 2000, 303).

2. For a critical analysis of the case *at face value*, see Fodor 1951.

References

Axelrod, Alan, and Harry Oster. 2000. *The Penguin Dictionary of American Folklore*. New York: Penguin Reference.

Bell, Richard Williams. 1846? *"Our Family Trouble": The Story of the Bell Witch as Detailed by Richard Williams Bell*. Alleged authorship and date; given in Ingram 1894, 101–186.

The Bell Witch. 2006. Online at http://paranormal.about.com/od/trueghoststories/a/aa041706.htm; accessed May 9, 2006.

Bovée, Courtland L., and John V. Thill. 1989. *Business Communication Today*, 2nd ed. New York: Random House.

Fodor, Nandor. 1951. The Bell Witch, in Hereward Carrington and Nandor Fodor, *Haunted People*, New York: Dutton, 142–72.

Guiley, Rosemary Ellen. 2000. *The Encyclopedia of Ghosts and Spirits*, 2nd ed. New York: Checkmark Books.

Hendrix, Grady. 2006. Little Ghost on the Prairie, *Slate Magazine*, May 4. Online at http://www.slate.com/articles/arts/movies/2006/05/Little_ghost_on_the_prairie.html.

Ingram, M.V. 1894. *Authenticated History of the Bell Witch and Other Stories of the World's Greatest Unexplained Phenomenon*. Reprinted, Adams, Tennessee: Historic Bell Witch Cave, Inc., 2005.

Lester, Ralph P. 1977. *Look to the East! A Ritual of the First Three Degrees of Masonry*. Chicago: Ezra A. Cook Publications.

Mackey, Albert G. 1975. *The Symbolism of Freemasonry*. Chicago: Charles T. Posner Co.

Masonic Presidents Tour. 2013. Online at http://www.pagrandlodge.org/mlam/presidents/jackson.html; accessed Oct. 21, 2013.

Morgan, Capt. William. 1827. *Illustrations of Masonry*; reprinted Chicago: Ezra A. Cook Publications, n.d.

Nickell, Joe. 2001. *Real-Life X-Files*. Lexington: University of Kentucky Press.

———. 2012a. Enfield Poltergeist. Skeptical Inquirer 36:4 (July/August), 12–14.

———. 2012b. *The Science of Ghosts: Searching for Spirits of the Dead*. Amherst, NY: Prometheus Books.

———. 2013. "Detective: Uncovering the Mysteries of a Word." Skeptical Inquirer 37:6 (November/December), 14–17.

Obituary of M.V. Ingram. 1909. *Clarksville Leaf-Chronicle*, October 5; reproduced at http://bellwitch02.tripod.com/martin_van_buren_ingram.htm; accessed October 31, 2012.

Waite, Arthur Edward. 1970. *A New Encyclopedia of Freemasonry*, in two vols. New York: Weathervane Books.

[THINKING ABOUT SCIENCE MASSIMO PIGLIUCCI

Massimo Pigliucci is professor of philosophy at the City University of New York, a Fellow of the American Association for the Advancement of Science, and coeditor (with Maarten Boudry) most recently of *Philosophy of Pseudoscience: Reconsidering the Demarcation Problem*. His essays can be found at rationallyspeaking.org.

Demarcation and Pseudoscience

My colleague Maarten Boudry and I just put together a collection of essays (*Philosophy of Pseudoscience*, University of Chicago Press) on what philosophers call "the demarcation problem," the issue of what exactly separates sound science from bad science and pseudoscience. It's the kind of somewhat arcane issue of interest to philosophers and the kind of people who read the Skeptical Inquirer, but it is notoriously difficult to get the general public involved, despite the fact that pseudoscientific practices often have (negative) consequences on people's welfare.

Imagine my surprise, then, when I opened a recent issue of the *New York Times* (September 28, 2013) and saw an article by Stephen Asma (a philosopher, it turns out) focused on the demarcation problem! This should have been good news (Hey! The most widely read paper in the world is talking about demarcation, and they asked a philosopher to do it!), except that the headline immediately gave me a bit of trepidation: "The Enigma of Chinese Medicine."

And sure enough, my fears were unfortunately confirmed. The piece begins with a gory episode where Asma, who is married to a Chinese woman, is at a Beijing restaurant and complains of a cold. The proprietor of the restaurant—prompted by Asma's wife—brings a live turtle to the table, slits its throat, and offers the fresh blood to Asma, who takes it (albeit uncomfortably), goes home, and "somehow" begins to feel better in the course of the following days.

The real kicker arrives near the end of the article, where Asma compares Chinese medicine's concepts of qi energy and body "meridians" with natural selection, genes, and the Higgs boson.

Let's set aside for a moment the ethics of brutally killing an animal that can feel plenty of pain just so that your cold becomes less importune. Asma isn't so naive as to actually infer a causal connection between drinking turtle blood and improving cold symptoms. He mentions the placebo effect but he says, "Who knows, maybe one of these days science will discover that turtle blood does contain some chemical that has an effect on the common cold virus." Yes, maybe. But even so, it wouldn't be a validation of Chinese "medicine," understood as a coherent body of practices and theories about human health. It would be just another example of a folk remedy arrived at by random trial and error that turns out to work for perfectly "Western" scientific reasons. As comedian Tim Minchin aptly put it, if "alternative" medicine works, we simply call it medicine.

The rest of Asma's article is full of half good points and abysmal non sequiturs (which, for a philosopher, really ought to be a no-no!). For instance, he correctly points out that Karl Popper's idea of falsification as the demarcation criterion between science and pseudoscience is too simple to account for the actual complexities of the scientific process. But then he goes on to claim that being "well versed" in logic doesn't guarantee you won't believe in woo. His example? Arthur Conan Doyle's (Sherlock Holmes's creator) belief in the curse of Tutankhamen. Asma seems to have mistaken the logical powers of Doyle's (fictional) creation for those of the novelist, and at any rate *of course* acquaintance with logic doesn't *guarantee* that one accepts only true beliefs. So what? Should we therefore throw out logic and critical thinking altogether?

But the real kicker arrives near the end of the article, where Asma compares Chinese medicine's concepts of qi energy and body "meridians" with natural selection, genes, and the Higgs boson. Well, you know, they all refer to invisible entities, and they all carry "explanatory power." Seriously? Asma himself seems to balk at the enormity of his own parallel, as he quickly adds that, admittedly, "the metaphysical causal theory [on which Chinese medicine is based] is more controversial."

Well, if by "more controversial" you mean entirely made up without a scrap of evidence and in likely contradiction of known physical laws, yes, I'd say that's more controversial.

After telling his readers about his adventures with turtle blood and feng shui, Asma continues: "While lying on the acupuncturist's table in China recently, I wondered if I was too skeptical or too gullible about qi." I wonder whether the reader will be able to guess which way my own judgment on the matter lies.

The crucial question, of course, is why is an otherwise accomplished writer and philosopher like Asma writing this sort of stuff (not to mention why it gets published in the *New York Times*). I will not speculate on possible psychological motives (as I mentioned above, his wife is Chinese), as I don't know the guy personally. But this sort of thing is unfortunately not unheard of among even very prominent philosophers: in the last few years philosopher of mind Jerry Fodor has coauthored a book about Darwin being wrong, and philosopher of mind (another one!) Thomas Nagel has published a volume in which he questions the current methodological and metaphysical commitments of science itself (without really offering a sensible alternative).

It is good to have people from outside of science, but who are well acquainted with its inner workings, to keep an eye on the epistemic warrant and underlying assumptions of scientific theory and practice. That's what philosophy of science (and also history and sociology of science) at its best is supposed to do. It keeps the conversation going, and hopefully minimizes the scientistic tendencies of some practitioners of science, infusing a bit of humility and prompting more transparency in the whole enterprise. But Asma, Fodor, Nagel, and others aren't doing science—or philosophy, for that matter—any favors by indulging in misguided criticism and the sort of "open mindedness" that Carl Sagan warned against (your brain may fall out). The demarcation problem is a serious one because science has extraordinary social cachet and commands huge sums of public financing, as well as because pseudoscience maims and even kills people. But please let turtles live in peace, and get used to the fact that there just isn't a remedy for the common cold. Nor are there such things as qi energy and meridians. ■

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Here's just a sample of what you'll find:

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Doubtful News editor **Sharon Hill** takes a look at a recent scare about alleged man-eating fish in her "Sounds Sciencey" column "Pacu Panic: Swallowed Hook, Line, and Sinker."

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Sheaffer's "Psychic Vibrations" column has appeared in the Skeptical Inquirer for more than thirty years; its highlights have now been published as a book (Create Space, 2011). Sheaffer blogs at www.BadUFOs.com, and his website is www.debunker.com.

Australian Man Films Giant Glowing Object in the Sky and Then Deletes Comments Explaining What It Is!

At 5:23 AM on September 2, 2013, YouTube user Lou20764 of UFO Australia was photographing the International Space Station (ISS) pass in the pre-dawn sky over Melbourne. Then about twenty minutes later, at 5:47, he noticed part of the sky light up, and then saw and recorded a huge, glowing object high in the sky. It seemed to be pulsating and changing its shape. He had two separate cameras running, and both recorded the same thing, which makes the possibility of the video being hoaxed extremely unlikely.

Lou posted the video to YouTube, where in a few days it was viewed over 100,000 times (http://goo.gl/x7ZBdb). A thread was started on the conspiracy-oriented website Above Top Secret, which attracted the usual mix of intelligent comment and wild speculation (http://goo.gl/NStZAS).

Noting the similarity of this event to previous rocket fuel dumps, space author and skeptic James Oberg suggested that a Chinese rocket launched just thirty minutes earlier was a likely candidate. Satellite expert Ted Molczan, who confirmed the identity of the "Top Ten" 1996 Mothership UFO sighting in the Yukon (http://goo.gl/26lO7k), confirmed that it was indeed the Yaogan 17 rocket, whose launch can be seen in a YouTube video (http://goo.gl/QOE2ir). The Chinese rocket was passing over Melbourne exactly where and when the object was recorded.

Molczan writes, "The fuel dump by the CZ-4C upper stage that launched China's third NOSS-like triad was seen over Australia, and a long video was made by Lou20764, from Melbourne. The event occurred on 2013 Sep 01 about 19:49 UTC (Sep 02 05:49 local time)" (http://goo.gl/CebccT). In other words, despite the description from Chinese state-owned media of this satellite's supposed research function, it is a reconnaissance satellite for the Chinese military, similar to the NOSS satellites that the U.S. Navy has been using for decades.

Oberg and others posted this information to Lou's YouTube page containing the video, but he promptly removed the comments. Lou replied, "Not putting up with a organized attack by trolls anymore—I just took out the garbage and I feel good about it." To Lou, anyone who threatens his prized UFO video by providing a rational explanation is simply a "troll." Of course, he left up adulatory comments even if their statements are inaccurate or false. Molczan wrote, "Lou20764 seems to believe he saw some sort of ET craft, and so far has been refractory to other ideas. When Jim Oberg posted a congratulatory note on his having captured the fuel dump and requested some technical details, Lou20764 deleted his messages and blocked him from making further comments. Unfortunate behavior, but it should not prevent us from enjoying the latest fuel dump imagery."

James Oberg did a thirty-minute interview in which he explains the whole thing (http://goo.gl/ePGv61). On his website (http://goo.gl/8RKh7M), he lists a collection of articles describing

incidents when satellite fuel dumps and other space activities gave rise to UFO reports.

* * *

From August 9 to 11, 2013, "Contact in the Desert" was held at the Joshua Tree Retreat Center in Joshua Tree, California. Fortunately it was held indoors, because outdoors the temperature hovered around 110 degrees. Among the "luminaries" lecturing were *Coast to Coast AM*'s George Noory, UFO mega-celebrity Steven Greer, Giorgio A. Tsoukalos (subject of the famous "I'm Not Saying it Was Aliens, But it Was Aliens" internet meme), David Wilcock, Jim Marrs, William Henry, Michael Salla, Jason Martell, David Sereda, Richard Dolan, and famed "UFO abductee" Travis Walton.

Why did Greer's security men wear shirts that plainly read "Black Ops Security" on them? I seriously doubt that people who work in Black Ops wear shirts to advertise that fact. That sort of defeats the purpose of a Black Op, doesn't it?

But not all of the heat was outside. A page on Unknown Country, the website of Whitley and Anne Strieber, has an article dated September 5, 2013, titled "William Describes a Bizarre Horror Show at a UFO Conference" (http://goo.gl/MWIv5m). It concerns William Henry, who lectures about far-out stuff like ancient Egyptian "stargates" and is a frequent guest on *Coast to Coast AM* and *Ancient Aliens*:

> William Henry tells a horrifying story of imprisonment of the audience at the *Contact in the Desert* Conference August 9–11. He says that David Wilcock came with a bodyguard, and that Steven Greer arrived with a whole group of bodyguards, who proceeded to lock the doors and allow nobody in or out during his presentation. If this happened, it was illegal, and we urge all UFO conference attendees to demand that they not be imprisoned during any performance for any reason.

David Wilcock is a "psychic" and best-selling author of loopy books on consciousness. He claims to be the reincarnation of Edgar Cayce. Wilcock was a big promoter of the Mayan Calendar hoo-hah; he claimed that after December 21, 2012, we would all be able to levitate, rewind time, and do instant healing. (See, for example, http://podcast.sjrdesign.net/shownotes_077.php, August 17, 2004.)

I know someone who attended that conference, so I asked him if this was true and if he knew anything about it. Short answer: yes. He doesn't want his name mentioned, but here is what he wrote:

> I may be wrong or Streiber is wrong but I believe it was Wilcock speaking when this incident happened. I'm outside talking to a friend at the coffee vendor when I hear some loud arguing with a familiar voice. The normally soft-spoken Henry was livid & was walking from the side of the hall to the front with someone trying to restrain him. He banged on the door & a security guard opened the door & he went crazy yelling at the guard for not letting his wife outside to get some air. Apparently she has a condition of some sort & also was extremely hot yet the guards didn't open the door to let her out. The yelling lasted for a few minutes & as Henry walked away with his wife, he was still yelling back at the guard, loud enough to where just about everyone in the vicinity heard. He said everything from it being illegal to lock people in, a big lawsuit can arise if anyone gets hurt, etc.… all valid points. One more thing I might add: Greer showed up with armed guards with "black ops security" written on their shirts. Wilcock not only had guards, he had a bomb-sniffing dog with him!! Can you believe that? Anyhow, it was truly a fiasco . . . every bit of it.

Why did Greer's security men wear shirts that plainly read "Black Ops Security" on them? I seriously doubt that people who work in Black Ops wear shirts to advertise that fact. That sort of defeats the purpose of a Black Op, doesn't it? However, it appears that there exists a security firm in nearby Palm Springs called the Black Ops Protective Agency, and I'm sure that Greer relishes the confusion this generates among his fans. Of course none of these speakers has the slightest need for personal security. It is entirely theatrical and used to bolster Greer's ego and claims like the offer of a multi-billion dollar bribe. So far as I know, David Wilcock is the only other speaker to indulge in security theater at a UFO conference. No other UFO speaker or celebrity, no matter how famous, pretends to need any special protection at such conferences.

On YouTube I found a video of part of Steven Greer's lecture on August 11, 2013, at the Joshua Tree conference center (http://goo.gl/zOcEpn). We can actually see three of Greer's security men, wearing yellow hats, positioning themselves in front of the exits, and they remain there for the duration of the video. I have never seen security guards do this at any other conference! At first we see two security men in front of the exit on the right. At about 1:42 into the video, one of the men crosses quickly and (apparently) takes up a position in front of an exit at the far left. We see him (I think) ever-so-briefly at about 12:58.

Greer repeats his earlier claim that he was offered $2 billion (not million!) to join the Conspiracy, which he declined. Greer's talk continues past the end of this video at 26:32, so we don't know if any security issues came up (like somebody trying to leave). ■

[NOTES ON A STRANGE WORLD MASSIMO POLIDORO

Massimo Polidoro is an investigator of the paranormal, lecturer, and cofounder and head of CICAP, the Italian skeptics group. His website is at www.massimopolidoro.com.

Curse of the Evil Eye

Some time ago, Wanna Marchi, a popular Italian TV personality, sold lottery numbers that she claimed could allow her viewers to win. When some of the numbers actually did win (as probability dictated), the appreciation from her clients grew. However, when more often than not the numbers did not win, it was even better for her. To those who complained, Marchi said that their numbers did not win the lottery because someone had put the "evil eye" on them. In financial terms, this meant that if she took 150 euros ($200), in order to sell the "lucky" numbers, she could now ask for over 2,000 euros ($2,700) in order to dispel the evil eye. When finally Marchi was arrested on charges of criminal conspiracy, aggravated fraud, and extortion, her assets amounted approximately to 32 million euros ($43 million), plus numerous villas and apartments all over Italy.

The evil eye is a lucrative business for many psychics and charlatans. However, the risks run by those who decide to rely on these frauds are often much worse than just a bloodletting to their pocketbooks. Not too long ago, the mother of a fourteen-year-old girl, worried about a persistent pain in her daughter's stomach, decided to turn to "Wizard Tony" from Lecce. After paying one thousand euros for the consultation, the woman had agreed to submit the daughter to a long series of "sessions" against the evil eye. Left alone with the "wizard," the girl was raped, and it was only after several months that the girl was able to overcome her fear of the threats that the fraudster addressed to her in order to induce her to silence, and confide to her mother what had really happened during those "sessions." Cases like this are reported almost every day in newspapers; just as many, if not more, remain hidden.

It's False, But . . .

The late anthropologist Alfonso M. Di Nola, in *The Mirror and the Oil* (Yale University Press), called the evil eye "a negative and harmful power exercised by people, things, animals and special situations on other men, intentionally or unintentionally."

This type of superstition has always existed and, though widespread in the Mediterranean area, is alive and persistent in most parts of the world under different names: "evil eye" in Anglophone countries; "horeh ayin" in Hebrew; "droch shuil" in Scotland; "mauvais oeil" in France; "böse blick" in Germany; and "ayin harsha" in Arabic.

At the basis of the belief there seems to be the power attributed to the eye as a source of ominous and destructive influence. "The Evil Eye," continues Di Nola, "seems to be originally connected to a magical power attributed to looking, eagerly or enviously, to other people's property. Hence, one of the names by which the ancient designated it is 'envy' that, in its etymological composition, means to look bad or look against (*in* = against, *video* = to look)."

Although the evil eye is a belief devoid of any scientific foundation, for those who believe it can have a very real

effect. "This belief," explains psychotherapist Armando De Vincentiis, "can lead to a suggestion so intense that it can generate in those who believe a predisposition for seeking negative opportunities and for becoming a victim of bad luck, according to well-known self-destructive tendencies." One could almost say that believing in the evil eye can bring bad luck.

"One of my patients," continues De Vincentiis, "believed she had been the victim of the evil eye and had turned for help to a psychic. The girl already had some psychological weaknesses that the skillful wizard immediately recognized and exploited for his plans. The so-called occult practitioner did no more than confirm the imaginary fears of the women through the use of some rituals that showed the suspected curse. Once the sessions were over, the extremely negative aspect—in addition to a considerable loss of money—was the worsening of her already proven mental health. In the long term, in fact, the belief that she had been the victim of a supernatural and uncontrollable event prompted the girl to interpret everything, even the simplest of facts, from a supernatural point of view. In short, she walked away from reality more and more and an anguish grew in her, linked to the fear of being hit at any time by events beyond her control, as well as her dependence to unscrupulous individuals."

It would be wrong, however, to think that people who believe in the evil eye are ignorant or naive. A recent EURISPES poll, in fact, shows that victims of frauds and scams in at least 14 percent of the cases have a high school diploma or a university degree. On the other hand, even though superstition seems absurd, we should not feel too guilty for, as Thomas Hobbes put it, "no living creature is subject to the absurd, except for man." In other words, if we try to make sense of the absurdity of the world (perhaps in a very loose way, such as with superstition) it is precisely because we are endowed with a rational mind.

Easy Rituals

So, what are the rituals through which psychics are able to convince their customers that they are victims of the evil eye? Here are the most popular ones.

Oil in the water. A drop of oil is put into a dish containing water. Depending on the oil droplet remaining united or being broken down in many smaller droplets, the psychic can draw conclusions about the presence or lack of the evil eye. It is actually a chemical reaction and anyone can experiment with it. Take two bowls and wash them with detergent and warm water. Put a cotton ball soaked in oil inside one bowl. Introduce an equal amount of water to the two bowls. At this point, let a drop of oil fall from the same height in the water of each bowl. On the "anointed" one the drop of oil will remain localized in a very restricted area. Conversely, in the clean one the drop will break. The difference in behavior in the two bowls can be easily interpreted in terms of surface tension, as amended by the presence of traces of oil on the plate treated with the cotton ball.

The presence or absence of the evil eye, in short, depends on the fact that the bowl was washed more or less well or, in some cases, was "prepared" beforehand.

Water and salt. Some psychics propose to dissolve a large handful of salt in a glass of water: if the salt does not dissolve, they claim it is because of the evil eye. Just try it, though, and you will see that the salt will never dissolve for the simple fact that the solution is saturated. Simply increase the amount of water and the salt will completely dissolve.

In the long term, the girl's belief that she had been the victim of a supernatural event prompted her to interpret everything, even the simplest of facts, from a supernatural point of view.

In another version of this trick, the psychic asks the customer to put the salt in a glass of water: if, after a few days, the salt "rises" to the edge of the glass the presence of the evil eye is certain. It is actually a normal physical-chemical process. If you take a glass full of water and you put so much salt until it is unable to dissolve any more, after a few days the water evaporates. First, a crust forms along the edges of the liquid, and then the water continues to evaporate and salt crystals are deposited also on the bottom of the glass. Meanwhile, the crust on the walls increases and rises to the brim. The phenomenon is due to the fact that the liquid rises by capillarity along the first crust, evaporates further, other crystalline deposits form, and so on.

Eggs and pillows. The previous demonstrations have in common the fact that they can also be produced in good faith. The phenomena, that is, always take place and are always inexplicable for those with no knowledge of physics and chemistry. However, there are other methods used by fake psychics to diagnose the evil eye that involve intentional fraud.

In one of these, the psychic takes a hen's egg, passes it over the victim's body and then breaks it into a saucer, revealing inside it some hair, dead insects, dirt, ashes... The truth is that, before the "test," the psychic prepared the egg, making a small hole at one end and from there inserted the hair and the rest of the dirt, finally closing the hole with a drop of glue. If the victim desires to hold the egg before the ritual, the psychic gives her a "healthy" one and then, in a moment of distraction, switches it with the prepared one.

In another test, disturbing objects such as feathers clotted in balls, dolls full of pins, animal bones and so on are found inside the pillow or mattress on which the victim usually sleeps. In these cases, it is always the psychic or an accomplice who hides the objects where they will be found. In certain situations, the culprit could even be a member of the family of the victim, persuaded in helping the fraudster by making him believe that this is what is needed in order to "cure" the sick person.

Waterproof photograph. This is a system used to convince a client that the protection from the evil eye, following the intervention of magical powers, is assured. Taking a photograph of the customer, the wizard plunges it into a pan of water and then extracts it perfectly dry. It is once again a chemical effect due to the fact that, before the test, the magician has sprinkled the water with lycopodium powder. This is a very fine powder, sold in health food stores, composed of the spores of a plant, which has the power of turning waterproof whatever is immersed in the lycopodium-infused water.

These are just a few examples of how mischievous simple scientific reactions can become when handled by a well-informed crook to manipulate someone willing to believe. ■

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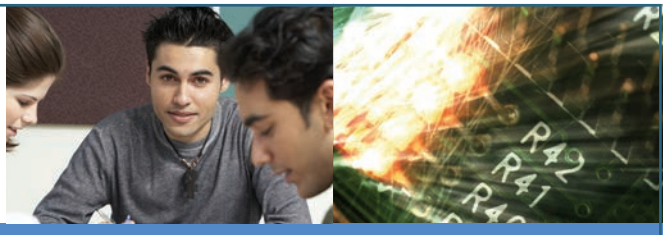
SCIENCE AND THE PUBLIC



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BMI Skeptics

Q: **I'm always wary whenever I see BMI (body mass index) used as a calculation for general health. I hear that the BMI system is inherently flawed since most professional athletes are considered overweight or even obese by BMI standards. What's the real deal?**

—R. Bolger

A: The BMI is a simple formula: (weight in pounds / [height in inches]^2) X 703. A score of 18.4 or lower indicates underweight; 18.5 to 24.9 indicates normal weight; 25 to 29.9 is overweight; and a BMI of 30 or higher suggests obesity. Last year, the U.S. Preventive Services Task Force, a government health panel, recommended that every adult should be screened for obesity during checkups, and physicians should routinely calculate their patients' BMIs.

This seemingly sensible recommendation received derision in many circles, and in fact the BMI has been attacked and ridiculed for years. Just how reviled is the BMI among the public? Type into Google "BMI is. . ." and the top three suggested searches are "bullshit," "wrong," and "a joke." Why such hate for an otherwise boring, uncontroversial medical formula?

Part of the reason is that the BMI has come under attack—not by medical professionals (who use it on a fairly regular basis[1]) but by fat acceptance activists who believe that the BMI unfairly discriminates against overweight people. Author and Salon.com blogger Kate Harding (2007), for example, created a slideshow explaining why BMI is badly flawed. Many other bloggers and writers have echoed her complaints, including at Jezebel, Slate, *Huffington Post*, and elsewhere.

By far the chief complaint is that BMI doesn't give accurate readings for everyone and that it overemphasizes the role of weight in health. An article provided by *Men's Health* magazine for the *Huffington Post* notes "The next time you happen to catch a Minnesota Vikings game, take a look at Adrian Peterson, the team's 6'1", 217-pound running back. Now ask yourself: what kind of physical characteristics would you attribute to him? Athletic? Lean? Fit? All of these certainly sound like valid answers to us—but his clinical classification might surprise you. By any normal standards, Peterson is one of the fittest men on the planet. But by our country's system of measuring body fat, he's overweight" (*Men's Health* 2010).

For other social activists the issue is not really about a height-weight ratio formula but instead what they believe the BMI represents: judgment against overweight women (and men), and an attempt to impose high beauty standards on women. As a blogger for Change.org asks in a piece typical of anti-BMI pieces, "If the BMI doesn't . . . take into account any distinctions of age, race, and sex, than [*sic*] perhaps its [*sic*] at best an outmoded, ineffective, and ultimately demoralizing standard by which to judge a woman's health?" (Menkedick 2010).

There are several problems with this characterization. The questions of whether the BMI is outmoded and ineffective will be addressed shortly, but suggesting that the measure is a "demoralizing standard by which to judge a woman's health" is bizarre: The BMI is not a "standard [of] health" (for men or women); it is a measure of adiposity (fatness). Though there is a strong positive correlation between excess weight and poor health, it is quite possible to be overweight (or even obese) and healthy. Thus the suggestion that the BMI is a measure of health is patently false. And any medical measure can be "demoralizing" in some way if it does not give its user the desired results, from a blood sugar strip to a bathroom scale. The purpose of any weight scale or measure is to be accurate, not to provide comforting assurances (like the magical mirror in *Snow White*, proclaiming that its user is the fairest—or thinnest—of them all).

It is absolutely true that the BMI overestimates the amount of body fat (mistaking muscle for fat) in some people such as football running backs. However, critics gloss over the fact that

most of us are not professional football running backs; the vast majority of people are not in categories where the BMI's validity is skewed. The limitations of the BMI are well known to doctors; the measurement was developed as a general guideline. No competent doctor would classify a patient as underweight, normal, or obese based only on a BMI score; it's a starting point, a general guideline, not a strict rule that correctly predicts overweight in everyone.

To use another medical example, doctors issue guidelines to the public about warning signs of a stroke (including arm weakness, speech difficulty, and face drooping). These guidelines are not perfect (people experience these symptoms without having a stroke), and are not a substitute for a doctor's medical diagnosis. Like the BMI, the guidelines were not designed to be—and never claimed to be—the best diagnostic tool out there, but instead a general rule of thumb to give the layperson a guide to their health status. Nobody would suggest getting rid of the simple stroke checklist because it does not correctly diagnose stroke in everyone (and has the potential for false positives), yet many suggest getting rid of the BMI for exactly the same reason.

Skeptical Inquirer columnist Dr. Steven Novella (2011), writing about the BMI on his *Science-Based Medicine* blog, notes, "It is widely recognized and admitted that BMI is problematic as applied to individuals. Muscular and athletic people may have a high BMI and not have excess adiposity, for example. Also at the extremes of height the BMI becomes harder to interpret. But this does not mean the BMI is useless. In fact, for most people BMI correlates quite well with adiposity. . . . BMI is a rough but useful estimate, good for large epidemiological studies where more elaborate fat percentage measurements are not practical."

Novella adds that any "controversy" about the BMI "has nothing to do with size acceptance. We can separate the question of social stigma from the medical facts. It is also folly to tie a social/ethical issue to a specific factual premise—because when the facts don't come out the way you wish that either weakens your ethical stance, and/or forces you to deny the scientific facts."

Another criticism is that the BMI was developed over 150 years ago, and its longevity somehow discredits it. What would become the BMI was developed around 1850 by a Belgian statistician named Adolphe Quatelet, and has been used more or less since then. Of course, germ theory has been around since at least 1815 and no one suggests that germ theory is "outmoded" or incorrect merely because it's been around for nearly 200 years.

Ironically, efforts by critics to challenge the BMI's validity often undermine the very research they promote. By challenging the validity of the BMI, they are also indirectly (but significantly) challenging the instrument validity of research that uses BMI in its methodology—often research they themselves cite in support of their claims. If the BMI really is an invalid measure as is often claimed, the validity of countless studies that use that measure must be questioned. This problem has received little if any attention, likely because most people promoting social agendas don't actually read the original studies they cite in support of their arguments and claims.

Another reason the BMI is useful is that many people do not notice weight gain. Contrary to the popular idea that most people (especially women) weigh themselves constantly in fear of gaining an ounce, studies show that a significant number of women evaluated at six-month intervals did not recognize recent gains in weight. Nearly one-third of women did not notice a weight gain of approximately 4.5 pounds over a six-month time, and one-quarter of women did not notice a weight gain of nearly nine pounds over the same period. Such findings concern researchers because if people don't realize they are overweight, they won't make efforts to lose weight (Radford 2012).

The BMI is also useful in that it is a calculation that anyone can make and does not require medical knowledge or a doctor's office visit. Not everyone has access to quality medical care and private physicians, and the BMI helps poor and underprivileged people determine whether or not they are at a healthy weight.

Many of the BMI critics' complaints are straw man arguments stemming from a fundamental misunderstanding of what the BMI is and what it claims to do. It is not a tool used by the patriarchal medical establishment for oppressing women, or for pressuring them to conform to impossible standards of beauty. It is instead a generally useful, accurate guide to helping average men and women determine their weight status. ■

Note

1. In his "Science Watch" column "Obesity Redux: A Response to Readers" (Skeptical Inquirer, September/October 2013) Kenneth Krause wrote "All BMI categories are controversial, however, because they fail to differentiate between lean muscle mass and fat mass or subcutaneous fat (less dangerous) to visceral fat (more dangerous)." It's not clear who the BMI is "controversial" to, but Krause may mean that it's controversial in the same way that evolution, vaccination, and global warming are controversial: not to scientists (or doctors) but to a handful of vocal activists and journalists in the lay public.

References

Harding, Kate. 2007. BMI project. *Shapely Prose* blog. Available at http://kateharding.net/bmi-illustrated/.

Menkedick, Sarah. 2010. Does BMI really reflect health? *The Female Form* blog (September 6). Available at http://rawwomen.tumblr.com/post/1079010534/does-bmi-really-reflect-health-by-sarah-menkedick.

Men's Health. 2010. BMI: Why body mass index isn't the best measure of a healthy weight. December 19. Available at http://www.huffingtonpost.com/2010/12/19/bmi-why-body-mass-index-i_n_798775.html.

Novella, Steven. 2011. Does weight matter? *Science-Based Medicine* blog (September 28). Available at http://www.sciencebasedmedicine.org/does-weight-matter/.

Radford, Benjamin. 2012. Many women don't notice weight gain. Discovery News (February 27). Available at http://news.discovery.com/human/psychology/many-women-dont-notice-weight-gain-120227.htm.

We offer two reports on the murder of Indian rationalist/skeptic Narendra Dabholkar.

Indian Skeptic Assassinated, World's First Anti-Superstition Law Passed

RYAN SHAFFER

Narendra Dabholkar was a famous skeptic in Maharashtra, India, who spent thirty years crusading against superstition, faith healing, and Indian "godmen." As one of the leaders of the anti-superstition movement, he received numerous death threats since becoming an active rationalist in 1983 and battling an industry against conmen, healers, astrologers, and godmen. It all came to an end in August 2013 when Dabholkar was assassinated as he went on a stroll near his home. Two suspects fired four times at close range and fled on a motorcycle. He died shortly after at a hospital. His death spawned massive protests, which forced the government to finally act on a law he long championed.

In 1989, Dabholkar cofounded and served as president of the Maharashtra Andhashraddha Nirmoolan Samiti (MANS), which translates into English as the Maharashtra Blind Faith Eradication Committee. Previously, Dabholkar completed his training to become a medical doctor at the Government Medical College, Miraj, and became interested in stopping godmen from exploiting the sick and needy. The Committee's stated goals include encouraging "scientific attitude, scepticism, humanism and critical thinking among the people" and opposing "harmful superstitions which exploit people." Besides healers, fortunetellers, and tantrics, MANS fights to stop the nearly 500,000 to 600,000 animal sacrifices that occur throughout Maharashtra each year. There are 180 branches of the organization throughout the state that deal with region-specific superstitions. For instance, the central part practices Devadasi culture, where a girl is forced at birth to be turned over to a Hindu temple where she will not marry and her whole life is to be dedicated to that temple. Though it is illegal now, the practice still happens and is connected to human trafficking. In addition, in Vibharba mentally challenged people are re-cast as "holy" people, and groups organize around them to solicit money.

Under Dabholkar's leadership, MANS took several approaches to challenge superstition.

Under Dabholkar's leadership, MANS took several approaches to challenge superstition. Reminiscent of James Randi's million dollar challenge, MANS offers a twenty-one lakh prize (2.1 million rupees, about $34,000) to anyone who can demonstrate a miracle, such as being able to levitate with the "power of yoga," or stopping their heartbeat for a minimum of five minutes. The group also engages in debates, confronts godmen who claim to have paranormal powers, conducts seminars for school children, and raises rationalist awareness during Hindu festivals. In 2011, Dabholkar helped get a court to rule that Ganesh idols "must be made by using clay and natural colours," instead of with chemicals in the fluorescent paint that include toxic material like lead and mercury.

At the legislative level, the organization fought for eight years to get the state government to pass anti-superstition legislation, which includes prohibiting the sale of "magical remedies for curing rabies and snake bites" and stopping those who "beat mentally ill patients in the belief that they are possessed by evil spirits." MANS described it as the world's first anti-superstition law, but right-wing critics denounced Dabholkar and the law as being "anti-Hindu." Supporters of the legislation have cited at least two cases of children being sacrificed, which the law prevents by banning "black magic." Nonetheless, the bill has been pending in the state legislature for seven years after the cabinet approved it,

but it was not put to a vote.

Various political parties and social groups supported a *bandh*, or a strike/protest, in Pune, one of Maharashtra's major cities. According to journalist Tejas Mehta, Dabholkar's murder "led to a massive outpouring of grief and anger in Maharashtra," which in turn "prompted the state government to push an anti-superstition law that he had championed for years." The law has been debated for years, but only after his death was the law enacted. Yet it still awaits support from the parliament, which is required or the legislation will expire.

Dabholkar was part of a growing but tight-knit movement that faces challenges in India. Dabholkar's colleague, Sanal Edamaruku, a rationalist based in Delhi, fled India last year after investigating a "miracle" in a church and making comments that authorities claimed violated a law that forbids "deliberate and malicious acts, intended to outrage religious feelings or any class by insulting its religion or religious beliefs." Edamaruku, now living in Finland, remembered Dabholkar as "one of the most wonderful soldiers of rationalism in Maharashtra because he was taking the movement down to the villages on one side and the legislature on the other."

Police are investigating the murder as a "planned killing," and the government is offering a ten-lakh reward (one million rupees, about $15,000) for information. There have been no arrests at this time, but police say it will happen "soon." There have been demands to turn the case over to India's federal police body, the CBI, from those blaming the local police for the lack of progress. The CBI has a very good reputation for not being corruptible.

In the meantime, Dabholkar's supporters are in mourning, vowing to keep his mission alive. Besides his activism as a rationalist, he served as editor of *Sadhana*, a weekly publication started by Pandurang Sadashiv Sane, a famous crusader for independence from Britain who fought against caste discrimination. Some of Dabholkar's articles are available on his organization's website at http://antisuperstition.org, and videos of his lectures are at http://www.youtube.com/MaharashtraANiS. ■

References

"About Us," Maharashtra Andhashraddha Nirmoolan Samiti, 2013. Online at http://antisuperstition.org/index.php?option=com_content&view=section&layout=blog&id=4&Itemid=65.

"Anti-Superstition Legislation," Maharashtra Andhashraddha Nirmoolan Samiti, 2013. Online at http://antisuperstition.org/index.php?option=com_content&view=article&id=97&Itemid=80.

Arun, George. 2013. "Narendra Dabholkar's death should inspire Indians to battle superstition," *FirstPost.com*, 20 August 2013. Online at http://www.firstpost.com/india/narendra-dabholkars-death-should-inspire-indians-to-battle-superstition-1046929.html.

"Challenges," Maharashtra Andhashraddha Nirmoolan Samiti, 2013. Online at http://antisuperstition.org/index.php?option=com_content&view=article&id=93&Itemid=81.

"Dabholkar supporters heckle politicians during Pune protest march," *Hindustan Times*, 22 August 2013. Online at http://www.hindustantimes.com/India-news/Maharashtra/Dabholkar-supporters-heckle-politicians-during-Pune-protest-march/Article1-1111115.aspx.

Burke, Jason. 2011. "Indian court orders Ganesh idols to be made of clay," *The Guardian*, 11 February 2011. Online at http://www.theguardian.com/world/2011/feb/11/ganesh-idols-clay-india-court.

Mehta, Tejas. 2013. "After rationalist Narendra Dabholkar's killing, Maharashtra govt clears anti-superstition ordinance," *NDTV*, 21 August 2013. Online at http://www.ndtv.com/article/india/after-rationalist-narendra-dabholkar-s-killing-maharashtra-govt-clears-anti-superstition-ordinance-408484?curl=1377134339.

"Narendra Dabholkar murder: Parties call for a bandh in Pune," *Times of India*, 21 August 2013. Online at http://timesofindia.indiatimes.com/city/pune/Narendra-Dabholkar-murder-Parties-call-for-a-bandh-in-Pune/articleshow/21951101.cms.

Shivadekar, Sanjeev. 2011. "Anti-superstition Bill to be ready in this session: Ajit," *Times of India*, 8 April 2011. Online at http://articles.timesofindia.indiatimes.com/2011-04-08/mumbai/29396060_1_anti-superstition-child-sacrifice-black-magic.

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The Sacrifice of a Skeptic

BHASKAR SRIPADA

On August 20, 2013, a sixty-seven-year-old man was on a morning walk, near the Omkareshwar temple in Pune, in the state of Maharashtra, India. Two gunmen shot him with four bullets at point-blank range and reportedly fled on a motorcycle. The man was Dr. Narendra Dabholkar, a tireless, nonviolent rationalist and fighter against superstition and false prophets.

Dr. Dabholkar was trained as a physician and worked in the medical profession for ten years when, at the age of forty, he decided to devote his life to inculcating a scientific temperament and rational thinking in the common man. His main goals were eradicating superstitions such as belief in witches, uncovering black magicians who purveyed witchcraft, and debunking so-called miracles performed by the "godmen" of India. To these ends, in 1989 he cofounded the Committee for Eradication of Blind Faith. In the years before his assassination, he had been actively campaigning for the passage of an ordinance to prevent "human sacrifice and black magic" in his Indian state.

A witch, according to common Indian superstition, is a woman with supernatural powers and evil intent. Even today, and all too often, when a misfortune befalls a community, alarmed villagers seek the guidance of a *tantrik*, or village witch doctor and black magic

counselor. Using his magical powers the *tantrik* would claim to identify the witch and then instigate a *Dayan Pratha*, or witch-hunt.

Women marked as witches are subjected to humiliation, such as having to have their heads shaved, being forced to go naked in public, etc. They are forced to abandon their property or leave the village. And sometimes the *tantrik* may even call for a woman's killing. Such a killing, done by a mob, is often preceded by inflicting enormous pain such as pulling of her teeth, cutting off her tongue, skinning her before beheading her, or burning her. It is estimated that about two hundred women per year lose their lives in witchcraft-related murders in contemporary India. A witch is often a woman with some property who fights against powerful people who wish to expropriate it, or who refuses the sexual advances of powerful men. She may be of low caste and so an easy target for revenge.

Dr. Dabholkar also challenged the so-called godmen, self-described Hindu ascetics who claim to perform miracles. These miracles may include the magical production of objects, such as idols, *lingas* (phallic symbols), and talismans. Some godmen have followings of millions and may have estates in the billions of dollars, often donated by their devotees. Some of them even enjoy government favors as ministers, and even scientific advisors to the Indian government are among their followers. Dabholkar contrasted such godmen to the benevolent saints and spiritual leaders of the past and present who did not take advantage of their followers or take their money. By making a point of demonstrating the sleight of hand and deception in the production of the so-called miraculous objects, Dr. Dabholkar aroused the ire of these godmen and of other anti-rationalist factions in India.

Beginning in 1995, he unsuccessfully struggled to have laws passed to abolish human sacrifices and ban black magic, in the process refining the distinction between "blind-faith" and faith. Often portrayed by his enemies as an atheist, he repeatedly clarified that he was not against belief in god, but only against harmful superstitions and spiritual false prophets. His proposed bills were opposed by powerful figures in the community who saw them as anti-Hindu and anti-tradition. The practitioners of the ancient Indian Hindu sciences—the leagues of the palmists, astrologers, godmen, gurus, *tantriks*, and black magicians—were more interested in their livelihoods than in the truth or the effects of their professions, and his message aroused their ire.

Dr. Dabholkar's sacrifice in his dangerous mission of distinguishing science from superstition and pseudoscience must be pursued, and not only in India.

There can be no question that there were many individuals or groups who felt affronted by Dr. Dabholkar's exposure of their "miracles." As Upton Sinclair said, "It is difficult to get a man to understand something when his job depends on not understanding it."

It is hoped that Freud, who wrote, "The voice of intellect is a soft one, but it does not rest until it has gained a hearing," was right, and that Dr. Dabholkar's death was not in vain. Days after Dabholkar's killing, the State of Maharashtra on August 22, 2013, passed an ordinance entitled, "Maharashtra Prevention and Eradication of Human Sacrifice and Other Inhuman, Evil and *Aghori* Practices and Black Magic Bill." We must hope that this signifies the beginning of what Karl Popper called "demarcation"—the process through which science is distinguished from pseudoscience—in India.

During the Middle Ages the West was convulsed with mass hysteria resulting in more than 40,000 women being burned to death as witches. Also there was persecution and execution of those who were decried as heretics and unbelievers, such as Giordano Bruno, the Copernican astronomer, and Galileo Galilei, who was convicted of heresy for publishing evidence that Earth revolved around the sun. In Western civilization since then, science often has dominated over superstition with clear benefits for humanity. Yet, many irrational beliefs continue to survive even in our more enlightened society. In America today, "creation science" (mandated to be taught in schools in Georgia and elsewhere) challenges Darwin's theory of evolution, and global warming is often believed to be a hoax, although scientific evidence has established beyond a reasonable doubt that it does exist.

Dr. Dabholkar's sacrifice in his dangerous mission of distinguishing science from superstition and pseudoscience must be pursued, and not only in India. No civilized society can afford to abandon such a zealous and informed skeptic or force him into silence. We mourn his loss.

References

Freud, Sigmund. 1927. *The Future of an Illusion*. In standard edition of *The Complete Psychological Works of Sigmund Freud*, trans. and ed. James Strachey, (London: Hogarth Press, 1961) Vol. 21, p. 53

Popper, Karl. 1972 (1962). *Conjectures and Refutations. The Growth of Scientific Knowledge* (London: Routledge and Kegan Paul).

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Harun Yahya's Islamic Creationism: What It Is and Isn't

The works published under the name Harun Yahya promote "Islamic creationism." A closer look at their internal logic reveals that their appeal lies in their capacity to mimic science.

STEFANO BIGLIARDI

Creationism has gone global, and in the Muslim world, it is mainly associated with one pen name: Harun Yahya. Behind this pseudonym, which evokes the Prophets Aaron and John, is a whole enterprise whose public face is the Turkish writer, religious leader, and TV personality Adnan Oktar (born in 1956 in Ankara).[1]

Already in his twenties, while studying philosophy and interior architecture design, Oktar identified the idea of biological evolution with the utmost expression and root of contemporary antireligious materialism and came to the fore as an anti-Darwinist religious preacher. In 1986, he was charged with promoting a theocratic revolution and served nineteen months in jail. This was the first of a long series of legal troubles. Oktar, who eventually dropped his studies, managed to gather around himself a group of students from well-off families. Such a group gradually took on the form of a sect, whose activities and internal dynamics repeatedly came to the attention of Turkish authorities.

To date, Oktar's biography includes episodes of hospitalization in a psychiatric institution, several imprisonments and indictments for possession of cocaine, sexual harassment, and blackmailing of collaborators. Oktar himself makes no secret or mystery about this. In interviews and presentations on his websites he is described as extraordinary and outstandingly devout while his troubles are described as either the result of the occult agencies he boldly fights against or as God's tests that Oktar patiently endures.[2]

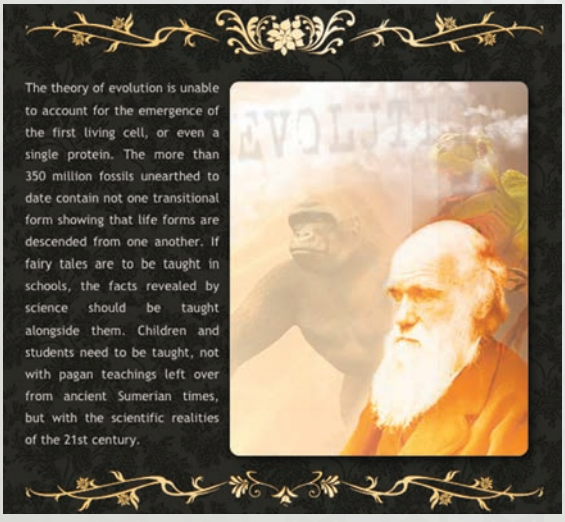
Harun Yahya's productivity is likewise outstanding. Up to and including fall 2013, almost 300 books in Turkish have been published under his name, more than 200 of which have been translated into English. Yahya's articles in Turkish listed on his official website number more than 2,000, and his English publications reach approximately 1,500. Translations are available in sixty languages, all widely advertised through more than 150 constantly updated websites. Oktar is unlikely to have written (or read) all of Yahya's works. Their original nucleus is produced by a team whereas the translations are commissioned to, or more probably spontaneously carried out by, sympathizers the world over.[3]

Harun Yahya's works are written in plain language, they are highly repetitive, and seem to mainly be composed using a bold copy-paste technique, with a system of quotations somewhat below any acceptable standard of scholarship. The books are indeed sprinkled with de-contextualized quotations from major scientists along with more controversial figures, no distinction being made between the respective intellectual profiles.

It is difficult to catch a glimpse of the real dimensions, sources, and reach of the enterprise. In 1990, Oktar founded the Scientific Research Foundation (SRF). The Foundation for Protection of National Values (FPNV) followed in 1995. The goal of the SRF, whose website boasts the organization of more than 2,600 scientific events in Turkey and abroad, is the "...establishment of a worldwide living environment that is dominated by peace, tranquility [*sic*] and love"; it is principally devoted to the defense of creationism. FPNV instead

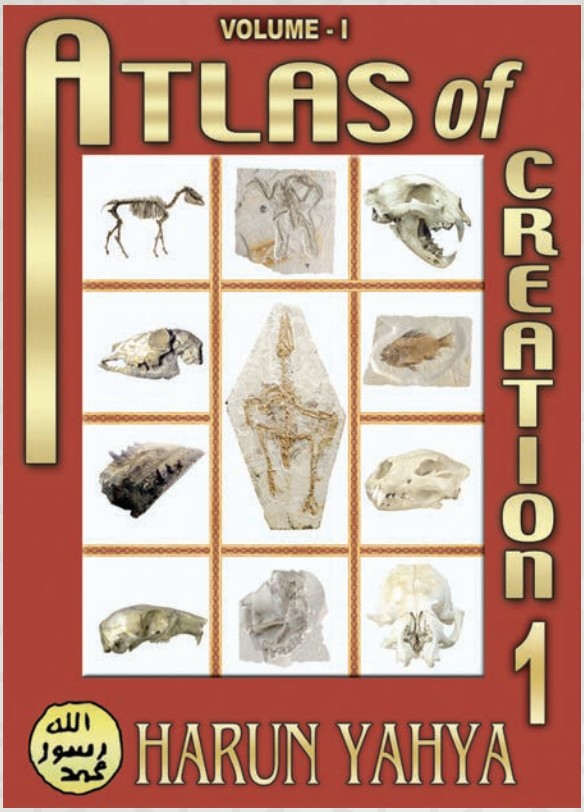
AKAD AYTUNC/SIPA/Newscom

Adnan Oktar with just a sampling of the works published under his pen name, Harun Yahya. Examples of its antievolution message are at right and below.


The theory of evolution is unable to account for the emergence of the first living cell, or even a single protein. The more than 350 million fossils unearthed to date contain not one transitional form showing that life forms are descended from one another. If fairy tales are to be taught in schools, the facts revealed by science should be taught alongside them. Children and students need to be taught, not with pagan teachings left over from ancient Sumerian times, but with the scientific realities of the 21st century.

seems more focused on Turkish issues. However, their real extent and connections, besides official statements, can only be estimated. Yahya must have powerful foes and friends alike. Telling attributes in this regard are not only his immense output, intense marketing, and massive free distribution (which presuppose huge financial backing), but also the pressure that he was able to exert on several occasions on the Turkish government in order to block websites perceived as hostile, like Richard Dawkins's official one in 2008.[4]

Yahya has apparently discovered not only the secret for uninterrupted productivity but also a source of fabulous wealth. These royalties are not a result of his publications, though: all books indeed, besides being materially available in glossy, full-illustrated editions, can be downloaded for free in different formats from his websites. This extraordinary diffusion already renders extremely likely that any bookstore goer or Internet user interested in Islam and science bumps, sooner or later, into one of the texts associated with his name. However, in 2007 Yahya even preempted the curiosity of potential readers when he sent the gigantic and luxurious first tome of his *Atlas of Creation* (complete with 768 glossy pages and images in lenticular printing on the hard cover that create an illusion of motion), unsolicited and free of charge, to natural science teachers, research institutions, and libraries throughout Europe and North America. The second volume followed in 2013.[5]



Despite his dubious reputation in his home country, his extravagant TV appearances (some of which have become viral YouTube clips—especially those where he flirts with heavily made-up young women), and the shortcomings of his books from a scholarly point of view, Oktar/Yahya still enjoys worldwide respect by readers who are either unaware of his whimsicality or do not give any importance to it. In 2010, Yahya was selected among the top 500 most influential Muslims by the Royal Islamic Strategic Studies center in Jordan.

According to Yahya, Darwinian evolutionist doctrines are the source and least common denominator of all the violent and repressive phenomena of the last century, such as terrorism and totalitarianisms (communism and fascism alike), all rejected on a par with racism, romanticism, capitalism, Buddhism, and Zionism (which after flirting with Holocaust denial in the 1990s he explicitly distinguishes from Judaism). He claims that they received constant support throughout the millennia by freemasonry, whose agency he describes as the principal occult actor of history in all its anti-religious manifestations. Yahya sees in Darwin the major advocate of evolutionism, however he claims as well that evolutionist doctrines date back even to ancient Greeks and Egyptians. Yahya rejects Darwinism following a double-track criticism: on the one hand he points out its moral consequences, whose disastrous effects he envisages in history. On the other hand

Harun Yahya

Nebraska near Snake Brook. This tooth allegedly bore the common characteristics of both man and ape, and came from a new species dubbed "Nebraska Man." Based on this single tooth, reconstructions of Nebraska Man's head and body were conjectured. Moreover, Nebraska Man was even pictured with his entire family! But in 1927, other parts of the skeleton were also found, and these newly discovered pieces showed that the tooth belonged neither to a man nor to an ape, but to an extinct species of wild American pig called *Prosthennops*.

3. *Ramapithecus* is known to be the biggest and longest-lasting fallacies of the theory of evolution. This name was given to fossils found in India in 1932, which allegedly represented the first stage of the split between the man and the ape, which supposedly occurred 14 million years ago. This fossil was used as solid evidence by the evolutionists for 50-some years. However, further analysis revealed that the dental characteristics of *Ramapithecus* were quite similar to that of some living chimpanzees. For example, *Theropithecus galada*, a high-altitude baboon living in Ethiopia, has incisors and canines, which are small relative to those of other living apes, and a short face like *Ramapithecus*. In the April 1982 issue of Science, an article titled "Humans lose an early ancestor" announced that Ramapithecus is only an extinct orangutan.

4. In July 1984, a nearly complete fossilized skeleton of an obvious human was discovered in Lake Turkana in Kenya. It is assumed that this fossil, nicknamed Turkana Boy, had been about 12 years old, and would have stood 1.83 meters tall when he became an adult. The erect structure of the skeleton is in no way different from humans today. The long, tall build of this skeleton totally matches with the skeletons of men currently living in the world's tropical regions. Richard Leakey said that this boy would go unnoticed in a crowd today.[4] Since this human skeleton was found in strata dated to be 1.6 million years old, it was classified by age alone as another representative of *Homo erectus*. The Turkana Boy is a typical example of the prejudiced and tendentious interpretation of the fossils by evolutionists.

The first Ramapithecus fossil found consisted of a deficient jaw in two pieces (see below). But evolutionist artists had no difficulty in drawing the fictitious environment and the family members of Ramapithecus, based only on this single jawbone. After it was understood that this creature, whose family and habitat were reconstructed from a single jawbone, was actually an ordinary ape, Ramapithecus was silently removed from humanity's fictitious family tree. (David Pilbeam, "Humans Lose an Early Ancestor," Science, April 1982, pp. 6-7.)

5. "Lucy" is the name given to the fossil discovered by anthropologist Donald Johanson in 1974. Many evolutionists claimed that Lucy was the transitional form between the humans and their so-called hominid ancestors. However further analysis on this fossil revealed that Lucy is only the member of an extinct ape species, known as *Australopithecus*. The brain size of the *Australopithecus* is similar to chimpanzees. Many other characteristics—such as details in their skulls, the closeness of their eyes, their sharp molar teeth, their mandibular structure, their long arms and short legs—constitute evidence that these creatures were no different from today's chimpanzees. Even the pelvis is similar to that of chimpanzees.[5]

6. Richard Leakey presented the skull designated KNM-ER 1470—which he said was 2.8 million years old—as the greatest discovery in the history of anthropology. According to him, this creature had a small cranial capacity like that of *Australopithecus*, together with a face similar to that of present-day humans, and was the missing link between *Australopithecus* and humans. Yet after a short while, it was realized that the KNM-ER 1470 skull's human-like face, which frequently appeared on the covers of scientific journals and popular scientific magazines, was the result of an incorrect assembly of skull fragments—which "mistake" may have been deliberate.

As you have seen, there is no scientific discovery that supports, much less confirms, the theory of evolution, only some scientists who believe in it blindly. These scientists believe in the myth of evolution themselves, even though it lacks any scientific foundation, and also try to make others believe it by using deceptive constructions and prejudiced interpretations. All the news about the so-called "ancestor of humans" and the illustrations used in these news are simply fabrications. Solid evidence has demolished the tale of human evolution.

In the following pages, we give some examples of the innumerable fossilized skulls that invalidate the theory of evolution. These skulls are among the evidence that none of these living creatures has ever changed throughout history, that none has transformed itself into another species and that every species has always existed with all the features it possessed from the very beginning.

Along with these pieces of evidence, the impasse and the absence of logic in Darwinist thought are presented. For example, Darwinists claim that species improved through continuous change. But how do they explain the constancy which is regularly seen in all living creatures? The theory of evolution that claims humans are supposedly descended from apes should also explain why other species have not undergone a process of transformation similar to the imaginary one apes have supposedly experienced.

Darwinists have no answer as to why bears have not decided to become bipedal on a given day, or why a fox has not been evolved into a skilled professor by developing its intelligence, or why a panda has not become a painter who creates impressive works of art. The subject of evolution has been depicted with examples and logics that even children could easily dismiss, simply to proclaim the inconceivable irrationality of Darwinism. Darwinism is presented as if it were a scientific theory, but is in fact an inconceivably irrational ideology.

As you shall see, Darwinism is the biggest scandal in history, founded entirely on lies and fraud and on irrational and illogical claims. The entire world will witness the final collapse of Darwinism in the 21st century.

Two evolutionist anatomists, Solly Zuckerman and Charles Oxnard, examined the fossil named "Lucy," declared to be the bipedal ancestor of all humans just after it was unearthed in 1974. They refuted that assertion and declared that Lucy's anatomy and manner of walking in no way resembled that of humans, and that it was merely a species of ape. In the following years, Lucy was announced to be certainly a species of ape, as was headlined on the cover of the magazine Science et Vie. Evolutionists had to say goodbye to Lucy as the putative ancestor of man.

1. Richard E. Leakey, *The Making of Mankind*, London: Michael Joseph Limited, 1981, p. 43.
2. William R. Fix, *The Bone Peddlers*, New York: Macmillan Publishing Company, 1984, pp. 150-153.
3. Marvin Lubenow, *Bones of Contention*, Grand Rapids, MI: Baker, 1992, p. 136.
4. *Ibid.*, p. 83.
5. Richard Allan and Tracey Greenwood, "Primates and Human Evolution" in the textbook *Year 13 Biology*, 1999, *Student Resource and Activity Manual*, (Biozone International, printed in New Zealand), p. 260.

586 *Atlas of Creation*

Adnan Oktar 587

he claims that Darwinism lacks scientific proof.

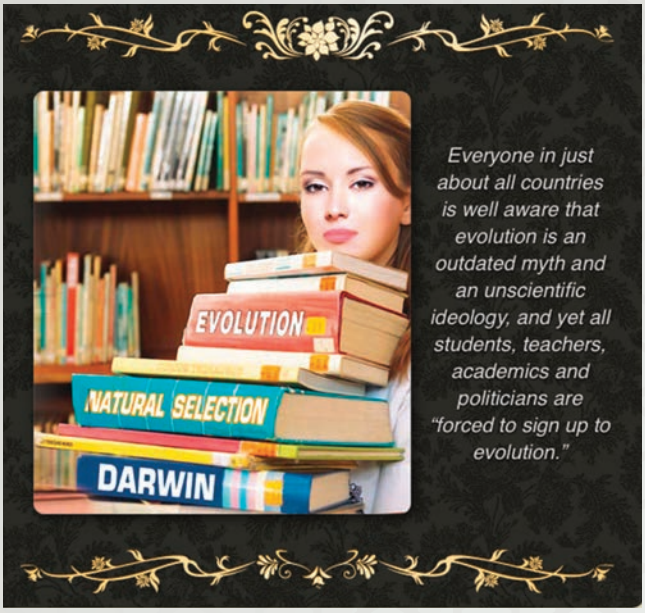
Despite the common polemical target, Yahya refuses to identify his position with that of the advocates of "intelligent design," due to the fact that they do not make explicit reference to Allah; moreover, he thinks the very reference to a "design" limits the concept of divinity, but he agrees that Earth is millions of years old.

Against the evils that affect contemporary society, Yahya endorses an ecumenical and messianic form of Islam based on a return to religious values that have their symbols and examples in the Prophets. According to Yahya, the time of the coming of a last prophet or Mahdi is near; he will appear and begin his activity in Turkey, the country that Yahya considers endowed with moral superiority and therefore apt to take up the leading role in an Islamic union. It is to be remarked that, despite refusing to explicitly identify with the Mahdi, Yahya constantly describes him in a way that curiously fits his own profile.

Yahya constantly celebrates nature, which is lavishly illustrated in his books, and describes natural phenomena as "miracles." In this sense, the whole universe is, as the title of one of his books recites, *A Chain of Miracles.* Yahya regards all the features and elements of the universe as clear proof of the existence of God. According to Yahya, everything in the universe is necessary, which means necessarily made for human life and, conversely, necessarily pointing toward the existence of God. Yahya usually describes these phenomena in plain language, further enriches the description with some schemes full of numerical data, and sprinkles the description with Qur'anic quotations and with passages from prominent scientists. The line of argumentation is always one and the same: If the phenomenon in question would not exist, life would not exist either—therefore God exists and he is good.

Especially over the past two years, Oktar seems to have further intensified his initiatives and diversified his contributions as an opinion-maker in public debates by engaging in different topics: he runs and appears on a television channel, specifically in a long chat show where he sits with men and women whose beauty he emphatically praises,[6] discussing politics and world affairs; his website voices his statements about pan-Islamic unity, Turkish nationalism, and, more recently, building bridges with Israel. However, if we consider the ambition expressed by the initiative of sending out the tomes of the *Atlas of Creation* to institutions all over the world, and the general appeal of all such discussions to different audiences, it seems safe to assume that the most relevant aspect (that is, the one most likely to endure and to entice a global audience) of Yahya's production is his creationism.

What are the reasons behind the appeal of Yahya's creationism? They must be most probably identified in the stylistic features of his works. In such works, God's existence (and hence faith) are taken as the object of a structured, "rational" argumentation within which proof is given and discussed. The books are written in a style that mimics scientific popularization with, for instance, quotations from scientists, usage of schemata and "data," footnotes (albeit incomplete ones), and so forth. More important, the discussion targets


EVOLUTION
NATURAL SELECTION
DARWIN
Everyone in just about all countries is well aware that evolution is an outdated myth and an unscientific ideology, and yet all students, teachers, academics and politicians are "forced to sign up to evolution."

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the famous (and famously connected to science) doctrine of Darwinism as its antagonist; it is apparently discussed on a footing of equality with experts by criticizing it, offering "proof," asking for counterproof, and so on. Yahya takes proof as the "facts" of the "natural world" that are presented as what natural sciences examine or are constituted of. Such "facts" fuse, and practically end up coinciding with, the *graphic representation of facts* that constitutes a "hyper-reality" in which the verbal discussion is inscribed. The pictures are doctored and assembled in order to enhance their visual appeal. The beauty with which they are then conceptually associated in the verbal part of the discourse becomes itself a "fact" that is used as "proof."[7]

All these are common strategies in marketing. They are

deployed whenever a shampoo is advertised referring to its "pH," or the virtues of a toothpaste are exalted in an advertisement with an actor playing a dentist in a white coat, although both the shampoo and the toothpaste might well be advertised by referring to equally pleasant but less "scientific sounding" qualities such as scent and taste, respectively. Moreover they can often be detected in new religions, especially as a proselytizing, ice-breaking strategy. For instance, it is a common experience that Jehovah's Witnesses, while approaching potential converts in person, do not initially describe the most controversial elements of their creed or the strict rules of conduct and the hierarchical structures that characterize their religious life, but rather propose a "biblical study" so that a religious message is presented with the credentials of a scholarly, objective discipline. There are even more poignant examples: the Raelians' official website hosts a regularly updated page of scientific news, therefore proving to be "science friendly" and scientifically updated. In its proselytizing activities, both in person and on the net, Scientology (which evidently attempts to hijack science's prestige from its very name) tries to gain prestige while antagonizing psychiatry—certainly not by stating right away the somewhat extravagant, sci-fi like doctrine that actually characterizes L. Ron Hubbard's (1911–1986) church.

The fact that Yahya can find so many sympathizers points at some objective difficulties in understanding and popularizing not just biological evolution but, more generally, natural science.

The construction of a visual hyper-reality is also another common marketing strategy: all the magazines devoted to scientific popularization the world over count on the visual appeal of the "facts" they represent to sell more copies. Furthermore, there are instances of a usage of pictures in a religious context analogous to Yahya's one. Telling is the example of those illustrated booklets distributed by Jehovah's Witnesses that constantly present enticing pictures of nature and the universe, either to argue in favor of the existence of a creator or to depict the afterlife—the delights of which are shown as a hyper-reality in which all visual and sensorial qualities of the present world are exalted.[8]

Yet, leafing through the pages of the *Atlas,* one is led to wonder: What is *Islamic* in this? Undoubtedly, Islamic elements influence some thematic and stylistic devices in Yahya's overall production (usage of Qur'anic verses, reference to the Mahdi, specific narratives) and some modes of production concerning Yahya's visual hyper-reality—for instance, a direct representation of God is not allowed. Yet the presence of Islamic elements has to be considered in the context of, and compared with, other elements of such a message. An inspection of the *Atlas* reveals that Islamic/Qur'anic references and narratives are diluted and rather marginal. As I see it, Islam ends up providing an extrinsic garb in which Yahya's religious message about God and nature is wrapped. In other words, Islam does not constitute Yahya's message's inner logic. Instead we have the scientification of a religious message.

The scientific-sounding effect is obtained, as I pointed out, through stylistic devices and constant attacks on Darwinism. Yahya's creationism boils down, indeed, to anti-Darwinism, whereas other forms of creationism are more focused on the supposed reasons why creationism is sound. Seemingly in Yahya's works, attacking Darwinism yields one main result: it hijacks its prestige. Attack science and you will appear as serious as it is. What happens has a parallel in science fiction-movies. Whereas science-fiction movies are often praised (and marketed) as *anticipating* future scientific and technological developments, they are rather dependent on what most sounds scientific at the time of their release, and are therefore parasitic on scientific popularization. Hence, the plethoric insistence on cloning in sci-fi movies in the 1990s (whereas you hardly hear reference to genes and mutations, say, in the original series of *Star Trek*). To obtain the same effect, Yahya might well have decided (or may decide one day) to antagonize, say, black holes or light-speed; for instance, he might claim that they are an insult to God's power, argue that they are not observable, vocally challenge Stephen Hawking in press as he did with Dawkins, and so forth. Of course there are specific historical and cultural reasons why Yahya specifically antagonizes Darwin. Yet what was conceived of as a defense of Islam has become a constant attack that overshadows the religious message itself, sounding scientific because it attacks science. The attack is the message.

Yahya's appeal, despite his extravagance, should be taken as indicative of some cultural dynamics. Relevant in such dynamics is of course the way in which biological evolution is taught, perceived, and discussed.[9] However, there is more to the picture than this. The fact that Yahya can find so many sympathizers points at some objective difficulties in understanding and popularizing not just biological evolution but, more generally, natural science. It is parasitic on what can be called, with Lewis Wolpert's famous expression, "the un-

natural nature of science," the non-commonsensical (and therefore easily misunderstood or misrepresented) method and object of science;[10] with science's prestige all exploited in a media-savvy way. It might also be legitimately asked whether Yahya's misunderstandings were, in the first place, personal and genuine, or if they are intentionally induced in the readership and cynically exploited to promote and nourish Yahya's overall message.

However, it can also be asked whether such discourse is really harmful for the promotion and development of science in (Muslim) societies or whether it rather fills a natural gap by creating a reassuring message for a scientifically illiterate or semi-literate audience. Besides, it can be stated that attacking Yahya is also an important identity-marker for those religious authors who advocate a theistic reading of biological evolution.[11] Taner Edis has pointed out that it is much easier to emphasize how crazy evolution sounds than explaining why it works.[12] Analogously it is also much easier to emphasize how ludicrous Harun Yahya is than explaining how biological evolution can be reconciled with religious concepts. The existence of a Harun Yahya is, after all, useful for his declared adversaries.

The final result of this analysis sounds like a paradox. The Harun Yahya enterprise disseminates an utterly postmodern product, a scientified religious discourse that, similar to a TV format, can be exploited by any other religion and can be subscribed to by any anti-Darwinists (and conspiracists), independently of their specific religious affiliation. The individual Adnan Oktar has rearranged ready-made materials and set in motion a mechanism whose success does not really depend on him but on pre-existing and not exclusively Islamic cultural dynamics. Similarly, it is unaffected by Oktar's troubles, and its appeal and impact go beyond the Yahya enterprise's plans and ambitions. Islam ends up being marginal and it disappears beyond a form of technobabble and highly doctored pictures.

The French philosopher Voltaire famously challenged the traditional denomination "Holy Roman Empire": it was neither holy, nor Roman, nor an empire, he wrote. Analogously, if we inspect "Harun Yahya's Islamic creationism" with fresh eyes and investigate its deeper logic and wider context, we can conclude that it is neither Harun Yahya's, nor Islamic, nor creationism.

Notes

1. To date, the most complete scholarly investigation of the Yahya enterprise is Ross Solberg 2013. The definition of Oktar as the "public face" of the Yahya brand is to be found in Edis 2008. See also, Numbers 2006, 421–427 and Riexinger 2008.
2. See Harda 2009.
3. See http://harunyahya.com/.
4. See Randerson 2008 and Hameed 2009.
5. See Dean 2007.
6. See Krajeski 2013.
7. See Schneider 2009.
8. See Elliott 1999.
9. For an analysis of Darwin's reception in the Muslim world, see Howard 2011.
10. See Wolpert 1992.
11. Criticism of Harun Yahya's creationism is voiced for instance in Guessoum 2011 and Sardar 2011.
12. Edis 2002, 76.

References

Dean, Cornelia. 2007. Islamic creationist and a book sent round the world. *The New York Times* (July 17). Available at http://www.nytimes.com/2007/07/17/science/17book.html?_r=1&ref=science&oref=slogin.

Edis, Taner. 2002. *The Ghost in the Universe. God in Light of Modern Science.* Amherst, New York: Prometheus Books.

———. 2008. Harun Yahya's legal troubles. *2008 Reports of the National Center for Science Education* (RNCSE) 28:3 pp. 4–5. Available at http://ncse.com/rncse/28/3/harun-yahyas-legal-troubles.

Elliott, Joel. 1999. You can live forever on a paradise Earth. The visual rhetoric of Jehovah's Witness iconography. Available at http://www.unc.edu/~elliott/icon.html.

Guessoum, Nidhal. 2011. *Islam's Quantum Question: Reconciling Muslim Tradition and Modern Science*. London and New York: I.B. Tauris.

Hameed, Salman. 2009. The evolution of Harun Yahya's "Atlas of Creation." Available at http://www.irtiqa-blog.com/2009/02/evolution-of-harun-yahyas-atlas-of.ht.

Harda, Halil. 2009. Sex, flies and videotape: The secret lives of Harun Yahya. *New Humanist* 124(5). Available at http://newhumanist.org.uk/2131/sex-flies-and-videotape-the-secret-lives-of-harun-yahya.

Howard, Damian, A. 2011. *Being Human in Islam. The Impact of the Evolutionary Worldview.* London and New York: Routledge.

Krajeski, Jenna. 2013. The Versace harem. Slate (May 2). Available at http://www.slate.com/articles/double_x/doublex/2013/05/building_bridges_the_sexy_kittens_of_turkish_tv.single.html.

Numbers, Ronald L. 2006 (Second Edition). *The Creationists. From Scientific Creationism to Intelligent Design*. Cambridge, Massachusetts, London, England: Harvard University Press.

Randerson, James. 2008. Creationist challenges Dawkins. *The Guardian* (August 19). Available at http://www.guardian.co.uk/science/blog/2008/aug/19/richarddawkinsisusedto.

Riexinger, Martin. 2008. Propagating Islamic creationism on the Internet. *Masaryk University Journal of Law and Technology* 2(2). Available at http://www.digitalislam.eu/article.do?articleId=1980.

Ross Solberg, Anne. 2013. *The Mahdi Wears Armani. An Analysis of the Harun Yahya Enterprise.* Huddinge: Södertörns Högskola.

Sardar, Ziauddin. 2011. *Reading the Qur'an. The Contemporary Relevance of the Sacred Text of Islam.* London: Hurst & Company.

Schneider, Nathan. 2009. Evolving Allah. Can one man succeed in stirring up the Muslim world against Darwin?. *Search* (March-April). Available at http://www.docstoc.com/docs/42950056/EVOLVING-ALLAH.

Wolpert, Lewis. 1992. *The Unnatural Nature of Science*. London: Faber & Faber.

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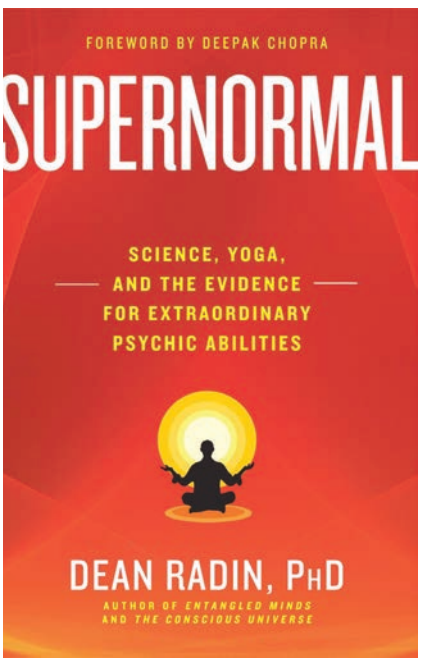
When Big Evidence Isn't: The Statistical Pitfalls of Dean Radin's *Supernormal*

Dean Radin's new book claims that the scientific evidence for supernormal human abilities is now overwhelming. Radin relies upon meta-analyses and misrepresentations of published results to produce outlandish confidence numbers that work against the very belief he is trying to foster.

DALE DEBAKCSY

We all want superpowers. I don't think there is a single person my age who didn't, as a kid, close their eyes and reach out toward some random object, hoping to will it into their hands with The Force. And while most of us stopped trying to manifest supernatural powers, hardly any of us ceased *wishing* we had them. In that spirit, Dean Radin's new book, *Supernormal: Science, Yoga, and the Evidence for Extraordinary Psychic Abilities*, attempts gamely to use science to revive our belief in our superpotential. That it fails to do so is a result of Radin's tendency to laud showy results over responsible ones, leaving the inquisitive reader utterly unsure about what to trust and what to leave behind.


FOREWORD BY DEEPAK CHOPRA
SUPERNORMAL
SCIENCE, YOGA, AND THE EVIDENCE FOR EXTRAORDINARY PSYCHIC ABILITIES
DEAN RADIN, PhD
AUTHOR OF ENTANGLED MINDS AND THE CONSCIOUS UNIVERSE

Most people coming to this book are looking for the evidence promised in the title. Unfortunately, they're going to have to wait, as the first third of the book is primarily a drawn out lament about parapsychology's lack of recognition by the academic community and its rejection by skeptics. We are offered a hundred pages of Radin *saying* that skeptics are wrong rather than *showing* that they are, with repeated assurances that he'll get to the proof…later. Had he retitled the book *Dozens of Pages of Bitching about Michael Shermer, and Then Some Evidence about Yoga* he could have saved us all a great deal of time.

Eventually, however, Radin purges himself of bilious resentment and is ready to get down to the business of providing the long-awaited evidence. Or rather, nonevidence, for he begins with an analysis of the Big Siddhis—those manifestations of yogic mastery that sound highly improbable to modern ears, like levitation, invisibility, and self duplication. He sets out to answer the reasonable question, "If the yoga sutras are a faithful account of the supernormal abilities of the human body, why can't I YouTube, right now, a hundred videos of yogis making themselves disappear in controlled situations?"

Radin's answer is that the sutras instruct yoga masters not to show off their perfection of the siddhis, lest it affect their ego. So, they refuse to demonstrate their mastery in order to keep themselves from the possibility of being tainted. This is a curiously selfish thing to do for a being supposedly concerned about minimizing humanity's suffering. Faced with the opportunity of demonstrating the power of yoga to overcome the thousand natural shocks of fleshy existence, and thereby potentially helping untold millions lead better lives, the yogi chooses to do nothing in order to preserve his personal purity. In the final analysis, we are left with two choices, either the big siddhis are real, and yogis are selfish jerks who value their own magnificent purity over helping their fellow man through maintaining a conspiracy of secrecy, or they aren't, and these yogis are simply charlatans or charmingly delusional. Either way, it doesn't look too good.

The real, statistically analyzed evidence doesn't come until *another* thirty pages later, with Radin's chapter on precognition. Right out of the gate, he produces a study that supposedly demonstrates the existence of psi effects with odds against chance of ten million billion billion (10^{15}) to one! Except it's not a study, it's a meta-analysis carried out in 1989 by Charles Honorton and Diane Ferrari in which they took all of the studies of forced-choice recognition (think of Bill Murray's experiment in the first scene of *Ghostbusters* but without the shocks) between 1935 and 1987 and combined them into one super-study. I was intrigued by the profoundly high number quoted by Radin, so I looked up the initial paper and found that Radin's representation left out a number of significant caveats found in the original.

With his very first statistically measurable study, Radin made a choice that casts a pall on all the numbers he will go on to convey.

For example, the studies gathered by Honorton and Ferrari are, by their own admission, "extremely heterogeneous" with z-scores ranging from -5.1 (extreme negative correlation) to 19.6 (extreme positive correlation). The studies are all over the map, with some highly uncharacteristic outliers. This made the paper authors uncomfortable, and they responsibly shaved off the top and bottom 10 percent of their data to get a better idea of what most of the studies were coming up with. That results in an effect size of .012, half that of their original result. This is very small, but it is still an interesting number. The fact that Radin decided not to report it, but rather to report the .02 result from the extremely heterogeneous data, is troubling. Why neglect a responsible but still intriguing result in favor of a larger result that even the original authors were uneasy about? And if this is how he reports data from readily available studies, how can I, as a reader trying to figure out what the evidence actually says, entirely trust his reporting on numbers for the studies he references that are much harder to find? With his very first statistically measurable study, Radin made a choice that casts a pall on all the numbers he will go on to convey, numbers that are far less towering than ten million billion billion (10^{15}) to one.

Ultimately, he decides that these forced choice tests aren't suitable to probe what is really happening with precognition and moves on to free-response experiments, where a subject is asked to describe the randomly selected location of an agent miles upon miles away. Of the 653 tests performed at Princeton, he selected a single example to show just how successful these tests were. This is his polished gem, his shimmering exemplar of the very best possible result obtained. It's worth quoting in full, because it lets us know what passed as a "success" in these trials, and therefore informs us of how confident we should be in the reported odds. This is what the subject described as the agent's future location:

> A rather strange yet persistent image of [the agent] inside a large bowl—a hemispheric indentation in the ground of some smooth man-made materials like concrete or cement. No color. Possibly covered with a glass dome. Unusual sense of inside/outside simultaneity. That's all. It's a large bowl. If it was full of soup [the agent] would be the size of a large dumpling!

Radin reports the actual location of the agent as "the radio telescope at Kitt Peak." The problem being that there is more than one radio telescope at Kitt Peak, and they look rather different. The most significant is the VLBA radio telescope run by the National Radio Astronomy Observatory, and is in no regard similar to anything that the subject mentioned. If you decide to keep digging until you get the result you want, you stumble upon the much smaller KP12m radio telescope run by the Arizona Radio Observatory, which is as close as Radin is going to get. It features (1) No indentation in the ground of any sort, (2) a white fabric retractable dome, (3) the colors white and silver, (4) *a giant thirty two foot telescope sitting right in the center of it*. The subject's response, then, is a mixture of plainly wrong positive statements, an absence of the most significant feature of the observatory (namely, its telescope), and a somewhat correct statement about the rough shape of the building (it isn't technically a hemisphere, but we can let that go).

This is not an average example chosen at random from the study—this is the single best piece of data that Radin could find from a study extending over two decades, and it is a mess. If this is the sort of thing that qualifies as a sing-it-upon-the-mountaintops success, little wonder, then, that he reports the odds against chance at a whopping thirty-three million to one. As American standardized testing learned years ago, the best way to improve results is to redefine success.

The rest of the section is a cataloging of other studies with ever-declining odds-against-chance that demonstrate a front-loading of favorable data, something that journalists tend to do but that scientists oughtn't. The most telling detail is the disappearance of error bars in his graphical representations of data. Radin is all too happy to include them when they make the data look good, as in his skin conductivity experiments, but then they have a tendency to disappear where they would make the data look very bad, as in his lab's occipital lobe experiments. It's a curious omission, compounded by his weakness for presenting outlier-responsive means in these graphs when medians would have been more responsible, if less dramatic.

It is one of the deep ironies of this

book that it begins with such extended flights of frustration about skeptics' responses to parapsychological data, and then spends its middle section doing everything that one can possibly do to rouse a skeptical response—misrepresenting report data, lowering success criteria, and playing a somewhat loose game with how rigorously confidence information is presented. I find it all immensely irritating. I very much want to know what the data is, and how trustworthy it is. I would gladly take a small but sure result over a larger but fishy one, but there is something of the showman in Radin that gravitates toward the latter, leaving the reader who wants to *think* about the data, rather than merely accept Radin's interpretation of it, with nothing to take away from the experience except frustration at what might have been. Radin is ever in this book his own worst enemy.

The subsequent sections are largely a repetition of the pattern established in his precognition chapter. In the telepathy section, we have another hand-picked trial example along the lines of the dismal radio observatory one, and it is only mildly more compelling. There are more meta-analyses that accomplish little more than casting doubt on the rigor of the whole statistical method of meta-analysis. Take, for example, this characterization of several different studies of ganzfeld telepathy experiments: "Of the seven meta-analyses, six reported statistically significant evidence with odds against chance ranging from a modest 20 to 1 to over a trillion to 1." The seventh study, he goes on to add, found no statistically significant evidence at all.

What are we to make of this egregious spread of reported odds? It stands to reason that, if I ask a chemist what the mass of a mole of oxygen is, and he says, "Studies suggest somewhere between one gram and a trillion grams," I would probably have *pretty* good cause to doubt the mass-determining mechanisms of chemistry. Meta-analyses appear to be the ideal subject of scientific debate—by combining dozens or hundreds of previous studies, they allow us to have a truly massive set of trials to work our statistics on, and at the same time seem to offer balance in so far as irregularly positive studies are often balanced out by uncharacteristically negative ones. However, there is a dire power within a meta-analysis, secretly wielded by the author, and it is this highly subjective aspect that lends each analysis its unique end result.

Put simply, the author gets to weigh how much an experiment counts to the aggregate through his evaluation of its quality. Ray Hyman, the author of one of the seven ganzfeld meta-analyses mentioned by Radin, highlighted how this weighing process often bends data toward desired outcomes in an article for Skeptical Inquirer in 1996:

> I did a meta-analysis of the original ganzfeld experiments as part of my critique of those experiments. My analysis demonstrated that certain flaws, especially quality of randomization, did correlate with outcome. Successful outcomes correlated with inadequate methodology. In his reply to my critique, Charles Honorton did his own meta-analysis of the same data. He too scored for flaws, but he devised scoring schemes different from mine. In his analysis, his quality ratings did not correlate with outcome. This came about because, in part, Honorton found more flaws in unsuccessful experiments than I did. On the other I found more flaws in successful experiments than Honorton did. Presumably, both Honorton and I believed we were rating quality in an objective and unbiased way. Yet, both of us ended up with results that matched our preconceptions.

In other words, if you want a study to count less, you tend to find more flaws with it, and if you want it to count more, you tend to gloss over flaws that might exist. In a normal study, this power would wreak comparatively minor havoc, because the trial number is low enough that a modest result doesn't lead to massive odds-against-chance numbers. However, when you exercise this power with millions of pieces of data, the impact is colossal, and the odds-against-chance skyrocket, resulting in "trillion to one" type numbers whose immensity belies their tenuousness.

There is perhaps phenomenal data within these studies, but Radin's tendency to reach for the astronomical keeps him focused on meta-analyses wherever he can get them, and, as the wild variation in results shows, there just isn't enough standardization of method in this approach yet for us, the readers, to really trust what is going on. Radin veers between hyper-specific reports of individual trials that are entirely unconvincing and massive billions-upon-billions meta-analyses that grow progressively less trustworthy in the telling, and thereby does himself disservice. Every time I found myself wondering, "Is there really a new physical principle at work here, or perhaps an extension of a known but ill-defined one?" that curiosity was soon stamped out by the author's eager proclivity for over-reaching.

Radin's intention with this book is to convince us average folks of the existence of supernormal abilities. In my case, it didn't succeed. After a certain point, I felt that my trust had been abused one too many times, and "Radin fatigue" set surely in so that data that might have been convincing presented on its own became suspect when issuing from the pen of the fellow who had taken me on so many rides already. I come away from this book not convinced, but not unconvinced as to certain details either, and if Radin can adjust his expectations from "convincing people" to "not unconvincing them" then, well, he might have a good night's sleep yet. ■

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When Does a Human Life Begin?

When human life begins is not a scientific question, but science-based thinking is still the best way to consider the issue.

ELIE A. SHNEOUR

"It is an undisputed biological fact that human life begins at conception."

Repeated over and over again, this notion has become an almost inviolate gospel, accepted well beyond the confines of the pro-life movement. Yet nothing could be further from the truth. Indeed, in the *amici curiae* brief to the Supreme Court in support of the appellees in the 1989 *Webster v. Reproductive Health Service* case, 167 distinguished scientists and physicians in related disciplines, including eleven Nobel laureates, substantively argued the fundamental proposition that there is no scientific consensus on when human life begins. That question, no matter how it is defined, cannot be answered with reference to any established scientific law or principle, because it cannot be empirically tested and is therefore not a falsifiable proposition. Thus, when human life begins is not a scientific question, but it is one of faith over which much ink has been spilled and raucous arguments, even murders, keep taking place.

Without resorting to arcane considerations it is possible to argue that life does not begin at conception, as defined by the fusion of an egg with a spermatozoon. The plain fact is that both the egg and the spermatozoon before merging are already living entities. That horde of competing spermatozoa engage in a remarkable race until only one of them is left to reach and fertilize the female egg. The rest of that multitude perishes, but it has indirectly contributed to preparing the egg for conception. One female egg is delivered each and every lunar month during a woman's reproductive years, but most of these ova are also lost and die unfertilized as well. The so-called pro-life advocates ignore the central fact that nature is enormously profligate, and in a sense that is a cruel requisite for the unyielding selection course that is involved in the vagaries of all life reproduction and continuity. Indeed that is universally true. Very few acorns become trees, the vast majority of them dying by the wayside. Life does not begin at conception also because it has never stopped. Thus while constantly challenged and drastically winnowed, this is the way life is assured of ultimate survival.

This continuity of life was first demonstrated in 1862 by the great French scientist, Louis Pasteur, in a celebrated series of experiments. What Pasteur proved is that life does not emerge spontaneously: It has to come from somewhere and has to go through the kind of challenged progression just mentioned. Although no reasonable person should summarily dismiss the concerns of those who oppose abortion on religious grounds, the multifaceted and brutal battlegrounds inherent to emerging human life are factors that simply cannot be ignored or demeaned by, say, calling all abortions murder, for example. In a civilized society one would conclude, therefore, that the pregnant woman should rightly occupy a crucial position with regard to the continuity of life. It would follow therefore that a pregnant woman has the inherent right to make an overriding choice about her pregnancy. It is this right that is demeaned by the pro-lifers by assigning, *ipso facto*, a public property warrant against a pregnant woman's right to make that reproductive choice. The pregnant woman has thus become the subject of gratuitous third-party control over her pregnancy and even over her life.

That life is a complex, three-billion-year-old evolving continuum on Earth is fundamental to any determination of when a human life in all of its essential elements actually begins. In fact it is actually a long process that has no clearly time-definable components. Phylogeny, the name given to the developmental history of species, outlines its many lines of descents and

relationships, a science that is derived from evolutionary history and which is gradually being elucidated. It is no longer possible to deny that biology has advanced beyond the point when both Darwinian evolution and biological phylogeny can no longer be questioned. While phylogeny is the history of the evolution of species, ontogeny is the history of the development of an individual in a particular species. Although a fetus in limited ways may recapitulate some of the course of its biological evolution, it does not do so as clearly as zoologist Ernst Haeckel did in 1892, declaring that "ontogeny recapitulate phylogeny," meaning that the fetus undergoes in weeks defined phases of billions of years of evolutionary history. A few disparate elements of that now obsolete pronouncement remain. For example, there is a major body stiffener called the notochord, a primitive backbone found in embryos of all chordates and first identified in fishes. It is a flexible rod-shaped structure that is also an integral part of the developing human fetus. That notochord eventually turns into the spinal cord. The term "chordate" for these organisms refers to the universality of the notochord and not to the spinal cord. In summary, the human fetus undergoes periods during which its morphology is to a degree shaped by its phylogenic history.

At three months of pregnancy, the human fetus is less than four inches long and weighs less than two ounces. It is yet a very long way from being recognizable as anything like a functional human baby, and it has no chance whatsoever of leading a life independent of the womb. The first critical determinant of potentially independent viability takes place at the twenty-fourth week when critical pulmonary air sacs mature and connect to the blood stream. Breathing then becomes theoretically possible, but up to the twenty-eighth week the brain and central nervous systems remain disconnected. In fact, the large neocortex, which distinguishes the human species brain from the rest of the animal kingdom, remains relatively nonfunctional even as late as the average newborn.

The fertilized human egg has only the potential of eventually becoming a sentient human being. It is important to keep in mind that the embryo, and then the fetus, have formidable numbers of hurdles yet to overcome before reaching that goal.

It is only after the twenty-eighth week of pregnancy that remarkable events begin to take place in a normal fetus. In an extraordinary and sudden burst of activity, brain development takes off in the neocortex. Dendritic spines, connections between nerve cells, proliferate as essential components of the brain circuitry. They are formed in very great numbers. Until that time, and probably not until much later, the fetus will lack the capacity for perceived sensations and conscious thought. Every clinical effort thus far to significantly accelerate fetal development schedules has been in vain. The growing evidence is that this is not likely to change with advancing technology. The critical stepwise timing of life's developmental processes likely cannot be hurried, probably in part because of their huge numbers and complexities. This means that on nearly all counts, the fetus only begins to acquire viable human attributes between the twenty-fourth and the twenty-eighth weeks of pregnancy. Note that these critical developments only *begin* during that period. They will still have a very long way to go.

The fertilized human egg has only the *potential* of eventually becoming a sentient human being. It is important to keep in mind that the embryo, and then the fetus, have formidable numbers of hurdles yet to overcome before reaching that goal. Nature herself imposes an important factor in this process, spontaneously aborting the pregnancy when the biological circumstances such as the quality of the conceptus are likely to be potentially unable to sustain viability.

Thus nature remains the final arbiter of life and death. Most women often do not even realize that an egg has been fertilized before her early pregnancy is silently terminated. Given these and many other constraints that stand in the way of initiating human fertilization, it is nothing short of astounding that a life can actually emerge from this arduous process of selection. Yet it can be affirmed that a basis exists for a sober and dispassionate discourse on the question of when human life actually begins. This issue lies at the core of human survival and prosperity. We owe it to ourselves to seek a science-based *modus operandi*. That is the only way to settle this dilemma at the basis of when a human life actually begins. ■

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Six Signs of Scientism: Part 2

In this second part of her two-part article, Professor Haack discusses "three more signs of scientism"—signs, that is, of a too uncritical deference toward science: a preoccupation with the (supposed) "scientific method"; looking to the sciences for answers to questions beyond their scope; and denigrating the worth of other kinds of inquiry besides the scientific, and of such other human talents as our capacity for music, dancing, or storytelling.

SUSAN HAACK

I like to say that there is no scientific method as such, but only the free and utmost use of intelligence.

—Percy Bridgman[1]

As I explained in Part 1 of this paper (SI, November/December 2013), by "scientism" I mean an over-enthusiastic and uncritically deferential attitude toward science, an inability to see or an unwillingness to acknowledge its fallibility, its limitations, and its potential dangers. But it is a substantial question, I continued, exactly when, and why, deference to the sciences is appropriate, and when, and why, it is inappropriate; and I suggested six indications that the line has been crossed—the "six signs of scientism" of which my title speaks:

- Using the words "science," "scientific," "scientifically," "scientist," etc., honorifically, as generic terms of epistemic praise.
- Adopting the manners, the trappings, the technical terminology, etc., of the sciences, irrespective of their real usefulness.
- A preoccupation with demarcation, i.e., with drawing a sharp line between genuine science, the real thing, and "pseudoscientific" imposters.
- A corresponding preoccupation with identifying the "scientific method," presumed to explain how the sciences have been so successful.
- Looking to the sciences for answers to questions beyond their scope.
- Denying or denigrating the legitimacy or the worth of other kinds of inquiry besides the scientific, or the value of human activities other than inquiry, such as poetry or art.

I explained the first three of these in Part 1, and now turn to the rest. And finally—taking advantage of the opportunity provided by the last of these signs of scientism—I will comment briefly on some of the tensions between contemporary, scientific culture and the older traditions that, in much of the world, it has by now at least partially displaced.

The Quest for the "Scientific Method"

The preoccupation with "the problem of demarcation," the third indication of scientism on my list, in turn both encourages and is encouraged by the idea that real scientific inquiry, the genuine article, differs from inquiry of other kinds in virtue of its uniquely effective method or procedure—the supposed "scientific method." However, we have yet to see anything like agreement about what, exactly, this supposed method *is*. A whole range of different, incompatible candidates have been proposed: various forms of inductivism (from an older, stronger version according to which scientists arrive at their hypotheses by induction from observed instances, to more recent, weaker versions according to which scientists arrive at hypotheses by a process better described as imaginative than as inferential, but then test them inductively); various forms of deductivism (Popper's conception of scientific method as a matter of "conjecture and refutation," i.e., making an informed guess, deducing its consequences, and then trying to falsify it, and Imre Lakatos's quasi-Popperian, post-Kuhnian distinction of progressive and degenerating research programs); and, more recently, Bayesian, decision-theoretic, etc., approaches.

Already by 1970, Paul Feyerabend famously drew the radical conclusion that the only methodological principle that would not impede the progress of science is "anything goes."[2] Other philosophers of science have suggested, somewhat more plausibly, that there is no *constant* scientific method, only a method that shifts and changes as science proceeds; or that there is no *single* scientific method, but many different scientific method*s* in different areas of science. But a thoughtful physicist had put his finger on the essential point as early as 1949. "There is a good deal of ballyhoo about scientific method,"

Percy Bridgman wrote; though, as he shrewdly observed, "the people who talk most about it are the people who do least about it." But no working scientist, he continued, ever asks himself whether he is being "scientific" or using the "scientific method." No: "he is too much concerned with getting down to brass tacks to be willing to spend his time on generalities."[3] "[I]nsofar as it is a method," Bridgman comments, the scientific method is a matter simply of "doing one's damnedest with one's mind, no holds barred."[4]

These bracingly commonsense observations are exactly right. *Any* serious empirical inquirer, whatever his subject-matter, will make an informed guess at the possible explanation of the event or phenomenon that puzzles him, figure out the consequences of that guess, see how well those consequences stand up to the evidence he has and any further evidence he can lay his hands on, and then use his judgment whether to stick with the initial guess, modify it, drop it and start again, or just wait until he can figure out what further evidence might clarify the situation, and how to get it.

Over centuries of work, however, scientists have gradually developed an array of tools and techniques to amplify and refine human cognitive powers and overcome human cognitive limitations: techniques of extraction, purification, etc.; instruments of observation from the microscope and the telescope to the questionnaire; mathematical techniques from the calculus to statistics to the computer; and even internal social arrangements that—up to a point, though only up to a point—provide incentives for good, imaginative, honest work, and disincentives to sloppiness and cheating.[5]

The underlying procedures of all serious empirical inquiry—taking a stab at an answer, and then checking it out—are not used *only* by scientists; the scientific "helps" to inquiry, which are constantly being adapted and improved, and are often local to some specific area of science, are not used by *all* scientists. So there *is no* "scientific method" used by all scientists and only by scientists. But, far from suggesting that it is simply a mystery how the natural sciences can have "made many true discoveries,"[6] this approach suggests a plausible account of how they have gradually managed to refine, amplify, and extend unaided human cognitive powers.

It also throws some light on whether the social sciences really use the same method as the natural sciences, or a distinctive method of their own. Like natural-scientific inquiry, social-scientific inquiry will follow the underlying pattern of all serious empirical inquiry. Like natural-scientific inquiry, it will benefit from internal social arrangements that encourage good, honest, thorough work, and discourage cheating. But at least many of the special tools and techniques of which it will have need are likely to be very different from the special tools and techniques most useful in the natural sciences.[7]

There are many questions clearly within the scope of one or another of the disciplines conventionally classified as sciences to which there are as yet no warranted answers.

Looking to the Sciences for Answers to Questions Beyond Their Scope

There are many questions clearly within the scope of one or another of the disciplines conventionally classified as sciences to which there are as yet no warranted answers. (This is why credulity about current scientific speculation, even flimsy and as yet untested speculation, is itself a sign of scientism.) There are also many questions within the scope of the sciences which it is not yet possible even to ask—as once, before DNA was identified and the concept of macromolecule worked out,[8] questions about the structure and function of DNA the answers to which are now known were not so much as conceivable. Still, all of these are questions clearly within the scope of the disciplines conventionally classified as sciences; and looking to the relevant sciences to answer them is entirely proper. But there are also many legitimate questions *outside* the scope of the sciences altogether: legal, literary, culinary, historical, political, etc., questions—and philosophical questions, on which I shall focus here.

Some issues once within the purview of philosophy of mind or the epistemology of perception have proven susceptible to treatment by the science of psychology; the baffling metaphysical question, "Why is there something rather than nothing?" has in part been resolved as cosmologists have tackled the problem of (what they call) "the accretion of matter."[9] Such boundary-shifting is not always or necessarily scientistic; indeed, it has often been a real intellectual advance. But when scientific answers that leave central elements of the older questions untouched are taken to be sufficient, this is scientism.

Results from the sciences frequently have a bearing on questions of policy:

environmental science might tell us what the consequences of damming this river would be; medical science at what stage a human fetus becomes viable; social-scientific studies the consequences of changing tax incentives in this way or that, of increasing the number of charter schools, of abolishing the death penalty, etc. But though a good deal of scientific work is policy-relevant, scientific inquiry—if it is to be genuine inquiry, and not what is oxymoronically called "advocacy research"—is policy-neutral. Environmental science can't, by itself, tell us whether the benefits of damming the river outweigh the drawbacks, and certainly not whether building the dam is a good idea; medical science can't, by itself, tell us whether abortion is morally acceptable (nor, of course, whether it should be legally permitted); economics can't, by itself, tell us whether we should change the tax system in this way or that.

To be sure, environmental scientists, sociologists, economists, etc., will probably have opinions about the policy questions on which their scientific work has a bearing; and it is entirely legitimate for them to express such opinions publicly. But something goes wrong when they allow their ethical or political convictions to affect their judgment of the evidence, or when they present those ethical or political convictions as if they were scientific results.

These relatively simple arguments suggest a relatively simple conclusion: that results from the sciences can give us information about the relation of means to ends, but cannot by themselves tell us what ends are desirable. This is true, so far as it goes; but it doesn't go nearly far enough. It leaves a much deeper matter untouched—whether, and if so, how, scientific results can have *any* bearing on questions about what ends are desirable. And on this deeper matter, I'm with John Dewey, who wrote that "restoring integration . . . between a man's beliefs about the world in which he lives and his beliefs about the values and purposes that should direct his conduct is the deepest problem of modern life":[10] the idea of science as *purely* factual, as *entirely* "value-free," and as *wholly irrelevant* to normative questions is far too crude.

Here (setting aside questions about epistemological, aesthetic, etc., values), I will focus on the ethical. As I see it, ethics is neither a wholly autonomous, *a priori* discipline, nor simply a subbranch of the human sciences. This is a kind of modest ethical naturalism, informed by the idea that what is good or right for humans to do cannot be entirely divorced from what is good for humans. Knowledge of what truly enables human flourishing—knowledge to which not only biology but also psychology, sociology, economics, etc., might contribute—though never *sufficient by itself* to tell us what to do, can have *contributory relevance* to ethical questions.

A startling paper in the *Lancet* provides a vivid illustration of the pitfalls of appealing to scientific results as if they were sufficient to answer ethical questions. The authors' thesis is that the morally best system for allocating scarce medical resources is the "complete lives" principle, which gives priority to adolescents and young adults over infants and older adults. As evidence, they cite empirical surveys supposedly showing that "most people think" that the death of an adolescent is worse than the death of an infant.[11] Set aside the fact that they cite only two such studies, neither of which actually reports exactly what their summary suggests. The essential point is that "*most people think* x is morally best" and "x *is* morally best" are entirely different, and independent, propositions. Conflating them is a sure sign of scientism.

The "evolutionary ethics" offered by E.O. Wilson looks at first blush like another example, albeit a more sophisticated example, of the same kind of scientism. The definition of the moral sentiments, Wilson tells us, falls to experimental psychology, investigation of the heritability of these sentiments to genetics, investigation of the development of the moral sentiments to anthropology and psychology, and the "deep history of the moral sentiments" to evolutionary biology.[12] If the claim is that such scientific investigations are *all* that ethical theory requires, it is surely mistaken: it rests on the unargued presumption that ethics must be understood in terms of moral sentiments; it doesn't tell us *what* sentiments are moral; and, in and of itself, the fact (supposing it *is* a fact) that these sentiments can be given an evolutionary explanation doesn't show either that they are, or that they aren't, ethically desirable. It is a kind of scientism.

But Wilson's evolutionary ethics is one aspect of a larger picture of what he calls "the unity of knowledge"; and

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his understanding of this "unity" is ambiguous in a crucial way. Sometimes he seems to be offering only the modest thesis that all knowledge must ultimately fit together in a coherent whole (which is obviously true); at other times, he seems to be offering the much more ambitious thesis that all knowledge must ultimately be derivable from scientific knowledge (which is—I believe, no less obviously—false). So perhaps it's not entirely surprising that, after seeming to suggest that results from the biological sciences might be sufficient to answer ethical questions, Wilson goes on to ask how the moral instincts can be ranked and which are best subdued, which moral principles are best incorporated into law and which admit of exceptions, etc.[13] This is as much as to acknowledge that biology is relevant but not, after all, sufficient; which, by my lights, is *not* inappropriate, and *not* scientistic, but potentially a step in the right direction.

Denigrating the Non-Scientific

Steven Weinberg writes of the gradual "demystification" of the world through scientific advances.[14] And indeed, developments in cosmology and evolutionary biology have provided natural explanations of phenomena once thought to demand *super*natural explanations; and in the process, have shown that questions about "design," whether of organs such as the eye, or of the universe generally, rest on false presuppositions. To acknowledge this is not, by my lights, scientistic. But it *is* scientistic to imagine that advances in the sciences will eventually displace every other kind of inquiry.

Here as elsewhere, the line between appropriate respect for science and inappropriate deference is often a fine one. It is not scientistic to value well-conducted empirical studies of the effects of legal changes (e.g., of the effect of abolishing the death penalty on the murder rate, or the effects of imposing a cap on punitive damages in medical-malpractice suits on the number of physicians a state attracts). It is, however, scientistic to assume that social-scientific "empirical legal studies" are inherently more valuable than traditional interpretive legal scholarship. Again, it is not necessarily objectionable for a university to give priority to medical research with the potential to improve health significantly over other, less practical, research; but it is a real loss—and not only because it is so unpredictable what work will have important practical applications—if universities cease to value serious intellectual work for its own sake, regardless of subject-matter or potential payoff.

Moreover, though our capacity for inquiry is a remarkable human talent—strikingly manifested in the sciences, though not only in the sciences—we humans have other talents, too: for storytelling, for singing, dancing, painting, and so on. Focusing for the moment on storytelling, I note that, loose talk of "two cultures" notwithstanding,[15] there are significant similarities as well as significant differences between science and literature. As C.S. Peirce observes, there is nothing more necessary to scientific work than imagination—though the scientific man, he continues, "dreams of explanations and laws,"[16] while a novelist dreams of imaginary people, events, and worlds. By my lights, not only is it scientism to assume that scientific inquiry is inherently better than other kinds of inquiry; it is also scientism to assume that science is inherently more valuable than literature (or art, or music, etc.). "Which is more important, science or literature?" is a hopelessly misguided question—as hopelessly misguided as "Which is more important, a sense of humor or a sense of justice?"

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* * *

What we now call "modern science" arose in Europe, and was the work mostly of white men. Post-colonialist, feminist, and other "science critics" sometimes complain that science is inherently racist and sexist—a white male thing. This is a silly idea. Modern science grows out of much older human efforts to understand the world; there were many important anticipations of modern science—in China, in the Arab world, and elsewhere; and by now there are capable scientists of virtually every race and gender. Science isn't a white male thing; it's a *human* thing—as I was vividly reminded, not long ago, when I talked at length with two post-docs working at a medical research institute in Switzerland, a young woman from Canada, and a young man from Uzbekistan: culturally worlds apart, they shared a common scientific heritage, and common scientific aspirations.

But of course, modern science is also a (relatively) *recent* thing. Moreover, scientific advances can pose a real threat to comfortable ideas about ourselves and our place in the universe, and to familiar, traditional ways of doing things. So it should come as no surprise that such advances sometimes meet resis-

tance from those who value older ways. Sometimes, the resistance is foolish. I read, for example, that some prominent Indian social scientists favor the traditional custom of variolation—inoculation with human smallpox matter, accompanied by prayers to the goddess of smallpox—over the modern scientific practice of vaccination using cowpox vaccine, which is much less likely to cause smallpox in the patient.[17] This, in my view, is worse than silly.

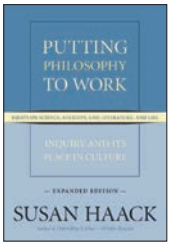
Nonetheless, it must be frankly acknowledged that when older traditions are displaced by newer, scientific practices and methods, there can be loss as well as gain. (I say "newer, scientific practices and methods"; but I am uncomfortably aware that discriminating the effects of scientific advances from the effects of industrialization, of urbanization, and now of globalization, is formidably difficult, and perhaps not even possible.) Once, the Panare Indians of Venezuela worked together to clear trees with stone axes; with the introduction of new, labor-saving steel axes they could clear trees much faster and more efficiently—but the traditional, agreeably cooperative ways of working died out.[18] Academics notice with dismay that students with the vast resources of the Internet available to them seem to have forgotten, if they ever knew, how to read an actual book. Virtually all of us, probably, have benefited in one way or another from advances in medical science; many of us, I suspect, like myself, also feel some unease about the impersonal character of technologically sophisticated modern medicine.

Such examples could be multiplied almost without limit; but I will stop here, with a simple thought: that to forget that the technological advances that science brings in its wake, much as they have improved our lives, have also sometimes come at a real cost in the displacement of valuable traditional practices and skills, is itself a kind of scientism. ■

Academics notice with dismay that students with the vast resources of the Internet available to them seem to have forgotten, if they ever knew, how to read an actual book.

Notes

1. Percy Bridgman, "Scientists and Social Responsibility" (1947), in Bridgman, *Reflections of a Physicist* (New York: Philosophical Library, 1955), 415–30, p.416.
2. Paul K. Feyerabend, *Against Method* (London: New Left Books, 1970).
3. Percy Bridgman, "On Scientific Method" (1949), in Bridgman, *Reflections of a Physicist* (n.1), 81–82, p.81.
4. Percy Bridgman, "The Prospect for Intelligence" (1945), in Bridgman, *Reflections of a Physicist* (n.1), 526–52, p.535.
5. Susan Haack, *Defending Science—Within Reason* (Amherst, NY: Prometheus Books, 2003), Chapter 4.
6. "A man must be downright crazy to doubt that science has made many true discoveries." Charles Sanders Peirce, *Collected Papers*, eds. Hartshorne, Charles, Paul Weiss, and (volumes 7 & 8) Arthur Burks (Cambridge, MA: Harvard University Press, 1931–58), 5.172 (1903).
7. *Defending Science—Within Reason* (n.5), Chapter 6.
8. The stuff we now call "DNA" was discovered in 1859 by Friedrich Miescher (who called it "nuclein"). The concept of a macromolecule was introduced by Hermann Staudinger in 1922. Franklin H. Portugal and Jack S. Cohen, *A Century of DNA: A History of the Discovery of the Structure and Function of the Genetic Substance* (Cambridge, MA: MIT Press, 1977); Robert Olby, *The Path to the Double Helix* (Seattle, WA: University of Washington Press, 1974).
9. John Maddox, *What Remains to be Discovered: Mapping the Secrets of the Universe, the Origins of Life, and the Future of the Human Race* (New York: Simon and Schuster, 1998), pp.25 ff.
10. John Dewey, *The Quest for Certainty* (1929; reprinted, New York: Capricorn Books, 1960), p.255.
11. Govind Persad, Alan Wertheimer, and Ezekiel J. Emanuel, "Principles for Allocation of Scarce Medical Resources," *The Lancet*, 373, Jan. 31, 2009: 423–31, citing Aki Tsuchiya, Paul Dolan, and Rebecca Shaw, "Measuring People's Preferences Regarding Ageism in Health: Some Methodological Issues and Some Fresh Evidence," *Social Science and Medicine*, 57, 2007: 688–96; Jeff Richardson, "Age Weighting and Discounting: What Are the Ethical Issues?" Working Paper 108, Health Economics Unit, Monash University (Australia).
12. Wilson, *Consilience: The Unity of Knowledge* (1998; reprinted New York: Vantage, 1999), p.279.
13. *Id.*, pp.279–80.
14. Steven Weinberg, *Dreams of a Final Theory* (1992; reprinted New York, Vintage, 1993), p.245.
15. C.P. Snow, "The Two Cultures" (1959), in *The Two Cultures and a Second Look* (Cambridge: Cambridge University Press, 1964).
16. Peirce, *Collected Papers* (n. 6), 1.48 (c.1896).
17. See Meera Nanda, "The Epistemic Charity of Social Constructivist Critics of Science and Why the Third World Should Reject the Offer," in Noretta Keortge, ed. *A House Built on Sand: Exposing Post-Modern Myths about Science* (New York: Oxford University Press, 1998), 286–311, p.291.



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DEMONOLOGY
A Study of What Is Not

Demonology is one of the most misused terms in English, particularly by those relating the phrase to the occult. But what is it?

STANLEY STEPANIC

The terms *demonology* and *demonologist* are two of the most misused terms in the world of pseudoscience, and sometimes even within evangelical belief systems centered around modern interpretations of exorcism. A cursory search online reveals several "demonologists" and their work. Some appear in sensationalist photos displaying various wares as though taking on a pseudo-witch hunter role against "the Devil" and "demons," though they rarely explicitly define what they mean when using these terms. Occasionally, such types appear on television series like *Ghost Hunters* dictating their practice of "demonology," yet they have no formal training or education, at least none that is stated. Unfortunately, this is part of the problem. In a society more and more frequently forgetting the mystery and rituals of the old world for modern technology and science, terms like *demonology* are more easily manipulated than one such as *chemistry*. It is not so simple to say "I am a chemist" without an actual background. It would, in fact, be ridiculous. Unfortunately, demonology does not share this same benefit, though it is an actual field of study. Why it has come to such misuse and what it really is are the main issues behind this article, which I'll use as a springboard into further writings about the connections of "demons" to real-world phenomena and how myth has been used to explain the unknown.

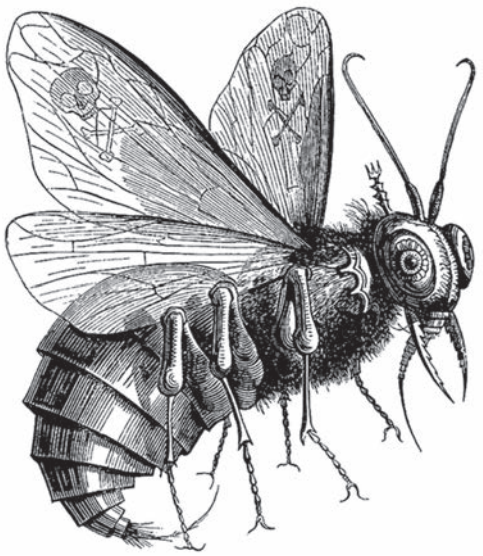
The term *demon* is today almost totally devoid of its original Greek meaning, which in itself is not so simple, suggesting at times a sort of inner presence that must be controlled by reason, destiny, or even divine power (Zijderveld 2008). As a further complication the term δαιμων (*daimon*) occurs in Greek literature as both a noun *and* a verb (Gall 1999) and was later shifted to a position among things considered "evil" by Christianity as the religion struggled to gain ground over paganism. Christianity thus relegated various creatures and old gods to the position of "demons," while contradictorily accepting certain practices as part of the faith, such as the practice of visiting and venerating spaces of the dead (Viola and Barna 2012). This, like the movement of the celebration of Easter and some of its components over a previously pagan holiday (Leonhard 2006), was a natural progression to eliminate attachments to old religions and practices, which were so ancient and familiar to our forefathers that their elimination was nearly impossible in certain cases (Spalding 1880). With any new religion that achieved dominance, the replacement of "the old" was something practiced for centuries, and the process was not unique to Christianity. For the West, a "demon" became a thing of evil, attached to the "Devil," which functions largely as a conglomeration of various old gods and mythical beings and leads to a discussion of demonology.

"Demonology" first came into usage in the English language in roughly the mid-1500s, though it may have originated in conjunction with developments in what is known as the "witch craze." The witch craze stemmed from a variety of factors, including political upheaval through the end of feudalism, religious conflicts against various heresies, and social collapse through disease, urbanization, and the breakdown of the family from effects of the Black Death (Kieckhefer 1976). Some of this frustrated energy of the Europeans was directed toward the symbolic entity of the "witch." This led to the grand delusion of the existence of witchcraft and the subsequent mania that caused the torture and death of hundreds of thousands of people, mainly women (Ben-Yehuda 1980), starting in the late 1400s with the publication of the infamous *Malleus Maleficarum* (*Hammer of the Witches*, *Hexenhammer* in German), which came almost 100 years after Pope John XXII's proclamation against witches in 1326 (Ben-Yehuda 1980).

Accusations of witchcraft were often established through "proof" of pacts with the Devil and maleficia, or any such events that caused an individual or their property harm but had no immediate explanation. Something as simple as pink eye, for example, was interpreted as a sign that a witch was at work in the community, as was a cow unable to provide milk or a sudden hailstorm. Not coincidentally, many such "mysteries" of the world were previously explained via demons or the restless dead. The term *demonology*, specifically, was originally in reference to powers through demons (minions of the Devil) (Thorndike 1925) but was eventually closely linked to witches. Most writings from roughly 1580 until the late 1600s, including various treatises, anecdotes, trial reports, and personal experiences of the so-called "demonologists," became attached to the idea of witches and pacts with the Devil. In 1597, for example, King James VI of Scotland published his *Daemonologie*, in which he refers to "the fearful abounding at this time in this country, of these detestable slaves of the Devil, the Witches or Enchanters" (translated into modern English by the author).

Such attachments of the witch to the Devil (and thus demonology to the witch) were rampant, as the witch craze reached epic proportions and was used by the Inquisition as a tool for combating various heresies and gaining more control for the Church (Russell 1984). The prestige of the demonologists through this tactic assured the popularity of their writings and the spread of belief in witchcraft itself, an entirely contrived concept. It is beyond my scope here to detail the entire history of the witch craze. It is enough to say that demonology at this time very rarely had anything to do with demons unless it related to the Devil, something that in itself was never very clearly defined. Demonology was specifically a field of the "study" of witches, perhaps to be rendered for our purposes as "witchology," as Rossell Hope Robbins once suggested, and the focus of actual

Taken from *Malleus Maleficarum*.



Beezlebub, taken from Colin de Plancy's *Dictionnaire Infernal*.

demonologists in the 1500s and following was primarily on pacts with the Devil and the women under his power (Russell 2007). Women were generally the focus of the witch craze because of an assumed belief that they were more prone to having "bestial appetites" and, as some witch hunters believed, witches were real beings and pacts with the Devil and various workings of his powers were a thing of reality. Later writers would take these ideas and even create systems of demons in massive detail, all functioning under the Devil. These demons had various workings in the world, typically with contrived, meant simply a *system of demons*, a hierarchy, delineating the various evil spirits of the world and how they interacted with human beings through the powers of the Devil.

Christianity had a fairly developed system of demonology at one time, in fact. This system slowly degraded into

Boris Zabirozhnik's whimsical depiction of a *domovoi*.

Taken from Matthew Hopkins's *The Discovery of Witches*; Hopkins himself is depicted in the woodcut with various familiars and their witches.

easily fell under the Devil's sway because "there is nothing which makes a woman more subject and loyal to a man than he should abuse her body" (Weber 1992). This is another matter I will not comment on further. I wholly remove myself from this antiquated thinking.

Aside from the atrocities committed against their fellow men and women, at least some of these individuals, these "demonologists," actually believed in what they were discussing. Though their "proof" was certainly embellished, they still subscribed to the theory that fanciful names (see, for example, Craig Cabell's *Witchfinder General*) or those taken from old gods.

Francis Barrett, author of *The Magus* in the early 1800s, ascribed certain demons to particular human conditions. Beelzebub was the demon that caused belief in false gods, which in itself is ironic since by at least some accounts it was, in fact, an ancient god (Studničková 2009)

So these ideas were quite *real* to many people at one time. This is because, in its earlier roots, demonology a vague conception of "demon" or "the Devil" with no separation into different types, though believers may sometimes use the term figuratively and not ascribe literal interpretation (Livingston et al. 2006). But this is much different than in the past, when demons could be used to define nearly anything at odds with popular belief. Proof of earlier systems of Christian demons can be found in such works as Collin de Plancy's *Dictionnaire Infernal*, which provides various descriptions and whimsical depictions of demons based on pop-

ular knowledge and anecdotes, most fulfilling a variety of roles in describing the origins of "sinful" thoughts and behavior. Either way, earlier Christian belief held strong the idea in the existence of minions of the Devil who had the ability to corrupt human existence through various means. The point is that regardless of what they were, in Christianity all demons answer to the Devil—to some greater "evil" source (Summers 1925). This is not unique to the religion; every culture in the world from the most advanced to the most primitive has some conception of "demon," usually functioning within the framework of a general evil force. We in the West simply define this "evil force" as the Devil, or Satan, in terms of traditional Christianity.

Demons, generally speaking, fit into the basic mythological view of a particular people and their worldview and should be defined as any sort of malevolent being that seeks to harm or irritate, whether it be a human being, their crops, cattle, or even household items. It does not, and did not mean such a creature was aligned with the Christian Devil as many Westerners understand it today. The Slavs, for example, had a very elaborate system of demonology that still persists in certain forms, with creatures like the *rusalka* that lived near rivers and were dangerous to men around spring, to house sprites known as *domovoi* that were extensions of earlier practices in ancestor worship (Vlasova 1994).

Thus the "demon" is not a Christian invention; it is an invention of humankind and a universal phenomenon, typically the result of misunderstandings of bodily phenomena, especially diseases.

Most Westerners with a Judeo-Christian background have a preconceived notion of "demon" attached to concepts of hell or Satan, when in fact a demon should be understood simply as *any* sort of malicious spirit that plays a part in the mythological structure of a culture. This has gone from specific ideas to a general sense of "demon" or simply "the Devil" for much of the Christian west. Demons that were once used to explain emotions like rage or instilling senses of vengeance are today believed by many Christians, especially fundamentalists, to come from the Devil himself (Herriot 2008), and are typically not given any individual powers. Demons for modern Westerners are quite similar to our conception of "angel," which went from a more detailed system of various tiers of celestial beings to a simple, universal (albeit vague) concept of a benevolent being connected to God who helps the human race (Muehlberger 2013). Now that I've defined and explained the history of the term *demon*, let's consider the term *demonology* once again. Specifically, what is the cause for modern misusages of the term?

A "demon" is not a Christian invention; it is an invention of humankind and a universal phenomenon, typically the result of misunderstandings of bodily phenomena, especially diseases.

Early on, the term was connected to hysteria concerning witches and was thus perceived as the study of *real things as they pertained to witchcraft*. That is not the case today; there is no witch craze, and very few people would admit that they actually believe in witches (aside from pagans who believe in Wicca, for example). *Demonology*, as a term, has a dual nature, with two separate meanings.

First, demonology can be defined as an actual belief system, one of faith of a particular people, which is outside the realm of science and a matter for religion. The Etoro, of New Guinea, for example, have a belief in different malevolent spirits and thus a *system* of demons that explains how these beings work within the framework of the rest of the world and other realms beyond human experience. This is demonology's first definition: a system of mythological categorization of malevolent beings within a greater mythological system particular to a group. Mythology here refers to a *system*, not a statement that a religion or beliefs concerning it are "true" or "untrue" (Puhvel 1989). The succubus, for example, was originally part of the system of beliefs in ancient Sumeria, a female demon that would have sex with men during sleep (Rosen 2008). Today this could be interpreted as an explanation for nocturnal emissions or sleep states such as sleep paralysis. Any group can have a system of demonology, one that explains what type of evil, malevolent beings exist, perhaps also how and why they interact with the world, often to explain things unknown. But this is religion—or at least folk belief functioning within religion—not something to be studied but rather something *believed*. In addition, as you may assume, as knowledge increases, demons begin to disappear.

In the second definition of the term, *demonology* is, as a field, the study of demons as *myth*. It is a subset of a broader field with a specific focus, like a lagomorphologist within biology; in this

case the field is mythology. Mythology is commonly divided into two main areas: upper mythology, concerning the gods, the heavens, benevolent beings, etc., and lower mythology, concerned with the underworld, evil gods, the restless dead, ancestor spirits, demons, and similar figures (Willis 1993). This separation into two main branches is simply due to the fact that human beings have always thought in dichotomies, so naturally we categorized our world into concepts of "good" and "evil"; the same delineation may be used in a study of such things stemming from our myths (Eccles 1991). Demonology is just a subset of lower mythology, simply the *study of the myth of demons*.

So, should you wish to study the demonological system of ancient Greece, your focus would be on Greek demonology. It does *not* mean you actually believe in these demons (or any for that matter), it means you study the demons of this particular culture in the specific context of their *mythological* function, which in most cases was used to explain natural phenomena not understood at one time. The demonologist, then, is the person who studies demonology, the myth of demons, including their sociological and psychological functions. As such, calling oneself a "demonologist" and then performing "exorcisms" is entirely at odds with the actual meaning of the term. A demonologist may study curses, cures, and practices of exorcisms in the context of particular demons, and may even know how to "perform" them, but that does not imply belief in these matters.

Most demonologists have studied under others in an educational setting that typically revolves around folklore or anthropology, sometimes sociology. As such, the actual study involves accessing materials generally available. Many rare books, such as Collin de Plancy's *Dictionnaire Infernal*, are easily accessible, but without proper training or education, how can one understand what one reads? Demonology requires knowledge in history, archaeology, theology, mythology, sociology, medicine, and psychology. Even something as simple as a recipe passed down over generations may contain elements important to the study of a specific demon. Garlic and the vampire, for example, were tied together long ago, and the herb plays a large role in Eastern European cuisine even to this day, largely because of that connection.

Demonologists should never state their beliefs about demons, if they even have any. This is a matter of faith and religion, which is outside the study of demons as myth. Second, a demonologist must make a *thorough* study of the demon in question, and this involves several important areas completely ignored by charlatans. In essence, to understand a single type of demon, a demonologist must research the background of the idea. This will *always* involve a study of the history of a culture, geographical roots, linguistic variations, historical writings, anecdotal evidence of "true" experiences of the creature, folklore, literature, natural phenomena related to the demon in question, and a variety of other topics—almost anything imaginable, including sociology and disease theory. The latter field is in fact the root of many demon myths due to simple misunderstanding of natural bodily processes.

Demonology is never a system to "cure" those who believe in the existence of such creatures, which in itself is a serious disregard for knowledge and an abuse of human emotions. Demonology is a real field of study, frequently misused by those who do not know the true meaning of the term. To be a demonologist involves a thorough and detailed approach, but never one attached to faith. Demonology is a study of the myth of demons, nothing more. Those who engage in using the term *demonology* in the sense of religion are practicing an entirely different field of study outside the scope of the mythology of demons. ■

References

Ben-Yehuda, Nachman. 1980. The European witch craze of the 14th to 17th centuries: A sociologist's perspective. *American Journal of Sociology*: 4.

Eccles, John C. 1991. *Evolution of the Brain: Creation of the Self*, Routledge, pgs. 194-216.

Gall, Robert S. 1999. Kami and Daimōn. A Cross-Cultural Reflection on What Is Divine. *Philosophy East and West*: 6.

Herriot, Peter.2008. *Religious Fundamentalism*, Routledge, pg. 173.

Kiekhefer, Richard. 1976. *Witchcraft: European Witch Trials*, Routledge, pg. 95.

Leonhard, Clemens. 2006. *The Jewish Pesach and the Origins of Christian Easter*, De Gruyter, pg. 305.

Livingston, James C., Francis Schüssler Fiorenza, and Sarah Coakley. 2006. *Modern Christian thought: The Twentieth Century.* Vol. 2, pg. 400, Fortress Pr.

Muehlberger, Ellen. 2013. *Angels in Late Ancient Christianity*, Oxford University Press.

Puhvel, Jaan. 1989. *Comparative Mythology*, Johns Hopkins University Press, pg. 2.

Rosen, Brenda. 2008. *Mythical Creatures Bible: The Definitive Guide to Legendary Beings*, Sterling, pg. 196.

Russell, Jeffery Burton. 1984. *Witchcraft in the Middle Ages*, Cornell University Press, pg. 200.

Russell, Jeffery Burton 2007. *A History of Witchcraft*, Thames & Hudson, pg. 55.

Spalding, Thomas Alfred. 1880. *Elizabethan Demonology*, Dodo Press Edition, pg. 21.

Studničková, Milada. 2009. A Lifelike Fly in Margins of Manuscripts: a Symbol as Trompe l'Oeil. *IKON* 2.1: 253-262.

Summers, Montagne. 1925. *The History of Witchcraft and Demonology*, Dover Publications, pg. 55.

Thorndike, Lynn. 1925. *Some Medieval Conceptions of Magic*, "The Monist", pg. 110 Vol. 25 No. 1.

Viola, Frank, and Barna, George. 2012. *Pagan Christianity?: Exploring the Roots of Our Church Practices*, Tyndale Momentum, pg. 16.

Vlasova, Marina, 1994. *The New ABC of Russian Folk Belief*, North-West, pgs. 298–312. (Published in Russian.)

Weber, Alison. 1992. *Culture and Control in Counter-Reformation Spain,* "Saint Theresa: Demonlogist", University of Minnesota Press, pg. 172.

Willis, Roy G. 1993. *World Mythology: The Illustrated Guide*, Oxford University Press, pg. 302.

Zijderveld, Anton C. 2008. *A Theory of Urbanity: The Economic and Civic Culture of Cities*, Transaction Publishers, pg. 9.

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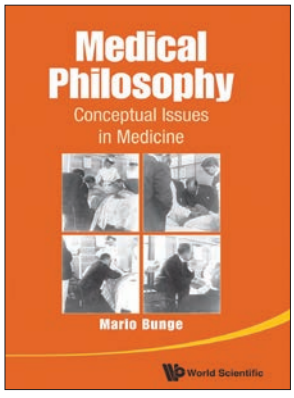
Philosophy Meets Medicine

HARRIET HALL



***Medical Philosophy: Conceptual Issues in Medicine*. By Mario Bunge.** World Scientific Publishing, 2013. ISBN 978-9814508940. 300 pp. Softcover, $48.00; Kindle, $25.19.

Medicine is chock-full of philosophy and doesn't know it. Mario Bunge, a philosopher, physicist, and CSI Fellow, wants to bring philosophy and medicine together for mutual benefit. He has written a book full of insight and wisdom, *Medical Philosophy: Conceptual Issues in Medicine*.

Whether doctors recognize it or not, medicine is firmly based on the philosophical principles of materialism, systemism, realism, scientism, and humanism. Bunge explains that:

> *Without materialism*, both diseases and therapies would be taken to be purely spiritual.
>
> *Without systemism*, every disease would be attributed to an independent module.
>
> *Without realism*, diseases would be viewed as either imaginary or as social flaws.
>
> *Without scientism*, either nihilism or dogmatism would prevail, and all the achievements of biomedical research of the last 500 years would be consigned to oblivion.
>
> *Without humanism*, all medical practice would be mercenary, and there would be no public health care.

He points out that all these scenarios are alive and well elsewhere. Under the guise of "alternative medicine," ancient prescientific medical systems are still being practiced nearly everywhere "to the detriment of people, the flora, and the fauna." CAMs (complementary and alternative medicines) are isolated bodies of belief that are not based on science and do not examine their own philosophical presuppositions. Like religion, alternative medicine relies on the gullibility of its clients, who have been educated to believe without evidence and without explanation. Bunge says that acupuncture is useless except as an analgesic placebo, that the Ayurvedic pharmacopeia is based in fantasy, that only a few of the 11,000 Chinese herbal medicines have ever been subjected to controlled clinical trials, that fully one-fifth of the most commonly prescribed Japanese medicinal herbs are toxic, that homeopathy ignores the whole of science, and that naturopathy is only marginally better in that it combines an ignorance of the scientific method with remedies in amounts that might have actual effects on the body. The CAMs have contributed nothing true or useful to health care. He discourages any further research on CAM hypotheses that are incompatible with the bulk of scientific knowledge.

Like religion, alternative medicine relies on the gullibility of its clients, who have been educated to believe without evidence and without explanation.

The concept of vitalism is now obsolete. Vitalists postulated some kind of supernatural vital spark because they couldn't imagine how the whole could have properties not present in the parts; today we understand that new properties are emergent and develop by purely

natural processes. A remnant of vitalism is seen in DNAism, the simplistic idea that everything is reducible to genetic information; this idea is a successor to the old immaterial "vital impulse." Understanding complex facts in biology requires both top-down and bottom-up approaches. We exist on several levels, and conditions like obesity and addiction are affected by social factors, inadaptations, and wrong decisions. Social and environmental factors can affect the action of genes through epigenetics and alterations of gene expression.

In medicine, "it is systems all the way." Holism sees a forest but not the trees. Individualism sees a single tree. Systemism recognizes that there is no whole without its parts and that some wholes have global properties that their parts lack.

Bunge throws another wrench into intelligent design: if our body were wise, it wouldn't get sick except through accident. The body produces antibodies for protection against infections, but it also produces endotoxins and maintains cancer cells.

He covers the history of medicine and the emergence of science, defined by Richard Feynman as "the belief in the ignorance of experts." He laments the way so many people confuse frequencies with probabilities: there isn't a 30 percent probability that you have a disease, you either have it or you don't.

He covers the scientific method, why randomized controlled trials (RCTs) are necessary but insufficient, and why most published research findings are false. He explains that the placebo effect is not evidence of the power of an immaterial mind over the material body, but just the opposite: the effect of a material cerebral cortex on material subcortical organs.

Like those of us on the *Science-Based Medicine* blog, he is a critic of evidence-based medicine (EBM). He complains that evidence-based medicine is not as novel as its champions claim it to be and that it exaggerates the weight of evidence at the expense of that of hypothesis. EBM "has only strengthened the empiricist tendency to accumulate undigested data and mistrust all theory." Science advances only when experiments are guided by hypotheses. Those who hold that passing a randomized controlled trial is all we need for proof are stuck in empiricism. RCTs are the gold standard, but there is a platinum standard (RCTs plus mechanisms of action) that is better. And even studies that fit the platinum standard should not be idolized.

This is a challenging book that will make readers reconsider their unconscious assumptions, confront new ideas about things they haven't thought about, and think more deeply about things they may have taken for granted.

Preventive medicine is arguably the most important medicine of all, and it is a social issue. Secular humanism is the only ethical system that defines "justice" as the balance of rights with duties. Everyone has the moral right to medical assistance. This implies a moral obligation to providing sanitation, vaccination, and access to health care for those who can't afford it. Today, modern pharmacology reaches only two out of every seven people. Libertarians would let individuals make their own decisions about vaccination, but in health matters, individualism just doesn't fly. Sanitary systems, compulsory vaccination, and epidemic management require action by society as a whole.

Bunge calls for a systemic approach to solve problems at the intersection between medicine and politics; he proposes a whole package of social policies with a multifaceted program to address access to health care, planned parenthood, more effective preventive measures, including better education about diet and hygiene, income inequality, housing, environmental protection, price control of pharmaceutical drugs, reinforcing NGOs, and more citizen participation in politics. Even if you don't agree with his solutions, you will probably agree with his identification of the problems.

This is not a "fun" read or an easy one, but it is packed with information and with food for thought about serious issues that affect every one of us. It is a challenging book that will make readers reconsider their unconscious assumptions, confront new ideas about things they haven't thought about, and think more deeply about things they may have taken for granted. Oliver Wendell Holmes Jr. said, "A mind that is stretched by a new experience can never go back to its old dimensions." This is a mind-stretching book. ■

Harriet Hall, MD, "the SkepDoc," is a member of the SKEPTICAL INQUIRER editorial board and a frequent contributor. She is also an editor of the *Science-Based Medicine* blog and a Fellow of the Committee for Skeptical Inquiry. For more, see www.skepdoc.info.

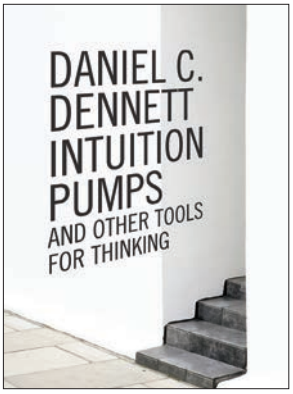
Explanations and Meta-Ideas

PAUL G. BROWN

To hear him tell it, Daniel Dennett's a narrow thinker. He's on record characterizing his life's work as an attempt to understand the brains (or minds) of just one species of East African primate, *Homo sapiens*. What makes his work interesting to readers of a skeptical and humanist bent has been the consistent scientific pragmatism underpinning his approach.

Intuition Pumps is a kind of "greatest hits" collection drawn from Dennett's long career. But it's as much a book about philosophical methodology as philosophy. Dennett's "intuition pumps" are carefully worked-out thought experiments, often taking the form of a story with characters, plot, and thesis. Dennett's purpose here is to show readers how to use intuition pumps: how to apply them, to spot when they're being misused, and even how to create new ones.

What does an intuition pump look like? Among the simplest examples Dennett gives is a useful way of responding to those who adopt (or more likely feign) the kind of "extreme skepticism" you get from a smart nine-year-old daughter who asks repeatedly, "But how do you know *that*, Dad?" The result of this maneuver is a kind of dogmatic doubt. If nothing can be known with complete certainty, then how can we claim to know anything at all? Dennett's pragmatic response is to ask how such a daughter can be said to know something like, "My daddy is a mathematician." The skeptical daughter can at best "sort of" understand what mathematicians do, "sort of" know what it means to have a job, and even only "sort of" understand what a "daddy" is. The point of this pump is to inform the intuition that all knowledge is somehow contingent, incomplete, and imprecise—but no less useful because of that.



Intuition Pumps and Other Tools for Thinking. **By Daniel Dennett.** W. W. Norton & Company, 2013. ISBN 0-393-08206-7. 498 pp. Hardcover, $28.00; paperback, $15.00.

The book is organized recursively (like one of the algorithms Dennett is fond of using as a metaphor) into sections and then into a great many small, self-contained but not-too-easily-digested chapters. The book begins with a list of general principles. Dennett enjoins us to make mistakes, to test our ideas at absurd extremes, and to engage only with the best arguments rather than the overwhelming mass of mediocre ones. These ideas are less pumps for any particular thought process than they are healthy cognitive habits for any critical thinker.

That someone numbered among the dreaded "Four Horsemen" of modern atheism recommends prefacing any disagreement with a humble and thoughtful re-statement of an opponent's ideas might strike some as surprising. But sometimes, all it takes to infuriate a weaver of woo is to restate clearly the last thing that came out of their mouths! (Just ask Deepak Chopra.)

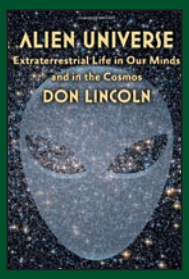
The bulk of the book draws on Dennett's extensive writing for both expert and lay philosophers. He takes us on a tour of the meanings of "meaning"; or rather, he describes a "rather commodious logical space into which a proper, scientific theory of meaning must fit. . . ." Along the journey we encounter a carnival of characters inhabiting intuition pumps: direct and indirect witnesses to murder, super-robots indistinguishable in their behavior or intentions from their creators, coin testers whose purpose changes depending on the vending machine they're installed within, and hapless nobodies locked in rooms with only libraries written in inscrutable Chinese logograms for company. Each of these stories pumps an intuition about meaning, and Dennett invites us to bend and twist the details to see how resilient they are.

In perhaps the most interesting section of the book for many SI readers, Dennett explains why it is useful to think of Darwinian evolution by natural selection as a kind of "universal acid" that can be applied to understand phenomena such as minds, memes, morals, and even why different species of cicadas hatch at intervals of thirteen and seventeen years. His approach to these subjects is not the same one taken by other writers on evolution. Where they tend to explore and explain the evidence—paleontology, genetics, and the facts of biology—Dennett comes at these questions from the high ground of syllogistic analysis.

For example, Dennett provides us with an intuition pump about evolu-

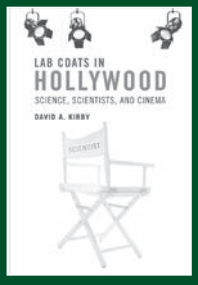
[NEW AND NOTABLE

Listing does not preclude future review.

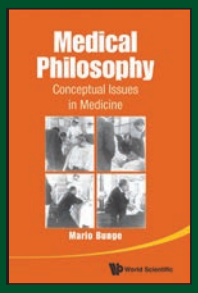


ALIEN UNIVERSE: Extraterrestrial Life in Our Minds and in the Cosmos. Don Lincoln. A senior scientist at Fermilab (and author of *The Quantum Frontier*) devotes the first half of *Alien Universe* to civilization's collective image of aliens, including those portrayed in movies and TV, and shows how our perceptions of extraterrestrials have evolved over time and how our fascination has had very mixed results (with hoaxes galore). In the second half he explores the scientific possibility of whether advanced alien civilizations do exist. Johns Hopkins University Press, 2013, 216 pp., $29.95.

BELIEVING IN MAGIC: The Psychology of Superstition. Updated Edition. Stuart Vyse. A psychologist (Connecticut College) updates his excellent 1997 book on the psychology superstition (winner of the William James Book Award) with new research (on jinxes, paranormal belief, and luck) and a renewed call for scientific thinking and the naturalistic exploration of the world around us. A readable account of the science behind our most irrational beliefs, the book is organized into seven chapters, on believing in magic, the superstitious person, superstition and coincidence, superstitious thinking, growing up superstitious, a magical worldview, and an examination of whether superstition is abnormal, irrational, or neither. Oxford University Press, 2013, 328 pp. $19.95.



LAB COATS IN HOLLYWOOD: Science, Scientists, and Cinema. David A. Kirby. One important area in which science, skepticism, and pop culture collide is in films, and how science is depicted in movies and television has an effect on the public's view of science. Kirby examines dozens of films, including *2001: A Space Odyssey*, *Contact*, *A Beautiful Mind*, and even *Finding Nemo* to tease out the messages, both pro- and anti-science, that these films contain. Kirby argues that positive depictions of science can help promote important scientific and environmental agendas. The MIT Press, 2013, 280 pp., $16.95.



MEDICAL PHILOSOPHY: Conceptual Issues in Medicine. Mario Bunge. Philosopher/physicist (and CSI Fellow) Mario Bunge (McGill University) provides the first book that analyzes and systematizes all the general ideas of medicine, in particular the philosophical ones, with an aim to ferret out, investigate, and interrelate the most general concepts and assumptions in biomedical research and practices. Reviewed in this issue, page 53. Imperial College Press, 2013, 288 pp., $48.00, £32.00.

SPAM: A Shadow History of the Internet. Finn Brunton. Brunton, assistant professor of information at the University of Michigan, takes a fascinating look at the much-hated and unwanted e-mails that make up the vast majority of all written communications. The book offers a cultural history of spam: what it is, how it works, what it means, and the people who generate it—as well as those who create computer programs to keep us from seeing it. An enlightening examination of a ubiquitous yet poorly understood technological and social phenomenon. MIT Press, 2013, 304 pp., $27.95.

—Kendrick Frazier and Benjamin Radford

tion that distinguishes between what he calls "skyhooks" and "cranes." Skyhooks, by their nature, are mysterious. They're ungrounded. You can't see how a "skyhook" gets its leverage. "Skyhooks" are useful when explaining constructions where there's no obvious "crane," which serves the same function as a "skyhook" but whose mechanism is directly observable. Dennett suggests that biological phenomena such as mitosis, symbiosis, multicellularity, and sexual reproduction are examples of "cranes," whereas "God done it" or "The Army Corps of Engineers built it" are examples of "skyhooks."

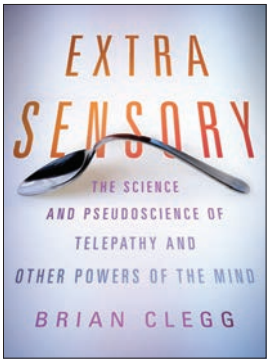
The "skyhook" versus "cranes" intuition pump proves particularly useful, because a "skyhook" does not always involve a supernatural explanation. It's perfectly reasonable to allow a "skyhook" to substitute for a "crane" so long as we keep in mind that it's an acknowledgement of our ignorance. As new "cranes" emerge, they fill in the gaps in our understanding. The cranes and skyhooks of Dennett's philosophical approach to evolutionary theory are a kind of power tool of intuition. In the closing chapters, Dennett shows us how it applies to free will and the development of moral systems.

Readers preferring down-to-earth subject matter—biographies, books on science—won't get much out of *Intuition Pumps*. The book is not an exploration of facts for facts' sake. Rather, it's a book about how to organize facts into explanations and meta-ideas about how to manipulate these explanations to better explain the facts. For those curious about Daniel Dennett's ideas and about how philosophers think, or for those interested in exercising their minds with a little "jootsing" (jumping out of the system), the book offers many insights and pleasures, small and large. ■

Paul G. Brown is a computer scientist specializing in building data management programs for very large scale science projects. He previously reviewed Daniel Kahneman's *Thinking, Fast and Slow* and Nate Silver's *The Signal and the Noise* for SI.

Extra Time or Game Over?

DANIEL GRASSAM



***Extra Sensory: The Science and Pseudoscience of Telepathy and Other Powers of the Mind*. Brian Clegg.** St Martin's Press, New York, 2013. ISBN 978-1-250-01906. 308 pp. Hardcover, $25.99.

The first thing that one might ask about *Extra Sensory: The Science and Pseudoscience of Telepathy and Other Powers of the Mind* is whether or not the world needs another book on ESP. Brian Clegg, author of more than a dozen books and contributor to numerous magazines and newspapers, thought that it did. Clegg holds a degree in physics from Cambridge and writes regularly on science topics. He is not someone unfamiliar with science. Knowing this may lead to some surprise when Clegg very early in the book, on page five, criticizes those who "dismiss such powers out of hand" commenting that to do so is "unscientific." Immediately following this statement Clegg responds to what his readers might be thinking and admits "a lot of effort has been put into the area in the past eighty years and it is hard to point to good, reproducible, incontrovertible evidence of the kind of psi abilities that we come across in anecdotes." Despite this admission, Clegg doesn't believe we should close the book on powers of the mind.

His own book follows a relatively standard structure in discussing these powers. Clegg opens stating a particular psi ability is possible. (He does not accept all; some he dismisses and explains the difference in Chapter 2). He then discusses how it might be possible (e.g., quantum entanglement may be a vehicle for telepathy). This is followed with a discussion of the best supporting research in that particular psi field. Then comes another surprise as Clegg proceeds with a thorough dismantling of the research. He picks apart the statistical shortcomings, poor controls, and outright dishonesty, and in doing so highlights why the best research still isn't good enough to provide indisputable proof. This format gives the book a discordant feel and may leave the reader shaking his head wondering why someone who understands the lack of evidence well enough to explain it to others so clearly continues to believe in the face of that absence.

To call Clegg a believer is not fair—he is better classified as hopeful. This stems from an incident in Clegg's childhood that he relates in the book and on which he hangs his thread of hope.

To call Clegg a believer is not fair—he is better classified as hopeful. This stems from an incident in Clegg's childhood that he relates in the book and on which he hangs his thread of hope. Clegg believes that not all possible avenues of research have been looked into. In the book he suggests a number of improvements that could be made to psi research to remove some of the open-to-interpretation results; and the suggestions are good ones. If remote viewers were required to identify a "randomly selected sentence from a randomly selected page of a randomly selected book on a concealed computer screen," the answer is either right or wrong. There is no judgment call on whether a vague description of a picture is a hit. If the reader is asking why these better studies aren't done, Clegg is asking that too. He even suggests a possible answer: "It sometimes seems as if researchers are more interested in

carrying out work that ensures that they are able to continue with their careers than with producing definitive results." Where others would suggest that this is another reason to withhold belief, Clegg instead states that it is time to stop parapsychology "in its present form and get the researchers to bite the bullet and go for the real thing."

This is why Clegg believes we shouldn't close the door just yet. He believes that until some better research is done we should not make a final call on ESP. It is here where Clegg fundamentally differs from scientists like Susan Blackmore, a former paranormal researcher who, tired of decades of negative results, gave it all up indicating that she had enough ". . . of being told that if I don't come and investigate X . . . that proves I have a closed mind. It doesn't. It only proves that after years of searching for paranormal phenomena and not finding them, I am no longer prepared to spend my precious time and limited energy..." Not so for Clegg, who put time and energy into this book, time that clearly shows in its well-written assessments of research methodologies and simple accounts of complex processes like the process of sight. In *Extra Sensory* Clegg covers a lot of psi research history. He may even have read Susan Blackmore's article "Why I Gave It Up," where the quote above comes from, though if he has he certainly doesn't agree we should give up just yet. ■

Daniel Grassam writes from Auckland, New Zealand. Email Daniel@simonpure.co.nz.

Delving into the Abduction Files

ROBERT SHEAFFER

THE ALIEN
ABDUCTION FILES
THE MOST STARTLING CASES OF HUMAN-ALIEN CONTACT EVER REPORTED
KATHLEEN MARDEN AND DENISE STONER

The Alien Abduction Files. **By Kathleen Marden and Denise Stoner.** Career Press, Inc., Pompton Plains, New Jersey, 2013. ISBN: 1601632711. 253 pp. Paperback, $16.99.

UFO researcher Kathleen Marden, best known for her writings about her aunt, the famous first-of-a-kind alleged UFO abductee Betty Hill, is now branching out to write about other alleged UFO abduction incidents. Since the recent death of famous abductionist Budd Hopkins, there hasn't been a book written on the subject by any well-known author.

Here Marden teams up with Denise Stoner, a longtime abduction investigator. The main subject of the book is the series of ongoing abduction incidents reported by Stoner herself. Her first alleged abduction occurred on August 13, 1982, in South Park, Colorado, where a satirical animated TV show of that name would later title its very first episode "Cartman Gets an Anal Probe." Some mysterious force seems to have levitated the vehicle containing Mr. and Mrs. Stoner and their daughter, depositing it three hours later some forty miles down the road, resulting in an impossibly short journey based on the car's odometer.

Because Stoner could not remember any details of her alleged "missing time" episode, Marden set out to hypnotize her, because "Hypnotic regression is an important tool for memory retrieval." Marden is fully aware that "Cognitive science studies have demonstrated that hypnosis is not a surefire method of recovering accurate memories. It is the malleability of memory and the fallibility of hypnosis that has cast it in a poor light. . . . It is generally understood by professionals that it is impossible to determine the historical accuracy of memories obtained through regressive hypnosis, regardless of the intensity of emotional expression." Well stated! But Marden goes on to simply ignore the problem that hypnosis doesn't work and uses it anyway, since "I would use my advanced training in hypnosis to reduce this possibility" of memory contamination. What came out of the hypnosis sessions was "a lifetime of abductions" for poor Stoner, from young adulthood to retirement age.

A second major case involves a woman named Jennie Henderson in rural New Hampshire. She had been hypnotized by the well-known UFO abductionist Dr. James Harder not long after her alleged abduction in 1988, "sharpening her focus and strengthening her recall." Under hypnosis she recalled how "she and her escort were

floated aboard a craft." After that, Jennie let twenty-five years go by before undergoing more hypnosis, this time by Marden. Unsurprisingly, it produced more tales of she and her children being floated up to a waiting UFO. The book contains a few more abduction accounts similar to these. What all these stories have in common is that there is no convincing evidence that anything out of the ordinary happened. One of the supposed abductees gives us a photograph of a "black helicopter" supposedly hovering over her home.

Fully aware of the rational arguments to be made against the reality of supposed UFO abductions, Marden suggests, "My experience has led me to the conclusion that some abduction phenomena cannot be fully understood within the tenets of Western scientific thought." As "an alternative hypothesis," she calls attention to Paul Hamden, "a medium," whose alleged messages from three groups of extraterrestrials—Zetas, Pleiadean, and Annunaki—have supposedly been validated by an unnamed Canadian scientist as containing "scientifically verifiable information far beyond his educational level and the scope of his knowledge."

Lest the reader conclude that there is nothing in this book except extraterrestrial fantasies related under hypnosis (*à la* Budd Hopkins), one might find some useful information in the "Marden-Stoner Commonalities Among Abduction Experiencers," a study of fifty individuals who identify as "UFO abductees." Among its findings:

- 64 percent are female. (The abductionist David Jacobs writes about abductees using the generic "she.")
- 79 percent believe that they have had multiple abduction experiences.
- 88 percent claim to consciously recall at least some of their abduction experience.
- 88 percent claim to have "witnessed paranormal activity in their homes."
- 88 percent claim to have received "telepathic messages from their ET visitors."
- 79 percent believed that they developed "new psychic abilities" after an abduction experience.
- 38 percent claim that they suffer from Chronic Fatigue Syndrome, as opposed to less than 1 percent of the general population.

Marden concludes the book,

> All of this supports the extraterrestrial hypothesis of alien visitation and the abduction of humans. It seems to us that we should be looking at the evidence and giving credence to those whose experiences cannot be adequately explained as psychologically generated or related to entity attachment, whether demonic or astral. Only then can real healing occur and greater understanding ensue.

So Marden is suggesting that so-called "UFO abduction" experiences might be the result of any of four things:

- extraterrestrial visitation
- psychological factors
- demonic entity attachment
- astral entity attachment

I suppose you could call that "staying open to all possibilities." ■

Robert Sheaffer writes the "Psychic Vibrations" column in the Skeptical Inquirer and blogs at www.BadUFOs.com

The Unexplained Files—TV Mystery-Mongering

STEPHANIE KEMMERER

In spite of The History Channel's descent into madness with shows like *Ancient Aliens* and *Hatfields & McCoys: White Lightning*, I naively expected that The Science Channel was still sane. I was wrong.

Their new series, *The Unexplained Files*, is an addition to the ever-expanding genre of "investigative" paranormal-themed programs. Since I was about seven, I have voraciously devoured hundreds of books about almost every aspect of the paranormal and occult. It has been a lifelong and enduring interest; as has skepticism, doubt, and scientific curiosity. So of course I *had* to watch it.

***The Unexplained Files*, The Science Channel.** *Series Producers: Josh Berkley, Sarah Davies, Dimitri Doganis, John Fothergill, and Ben Fox.*

Certainly it is expected that a show of this nature would touch upon many theories and ideas that are bizarre, strange, and unbelievable. That is essentially what the paranormal is. But it would seem safe to cautiously assume that The Science Channel, owned

by Discovery Communications Inc., would approach these topics, well, you know, *scientifically*.

The show runs Wednesday nights and although I missed the first episode, I was able to catch the second when it aired on September 4, 2013. The first half of the program was devoted to the topic of cattle "mutilation," which has been taunting the paranormal community for many years. (I was so disgusted with what I saw that I didn't make it to the second half.)

A few years ago I came across an article that explained that these "mutilations" are nothing more than the work of disease, predators, scavengers, and decomposition. Surely, I thought, a program on The Science Channel would critically and logically examine that angle. Sadly, I was wrong again.

It did not take long to see how wrong I was. The segment began with the narrated statement that, "there are global phenomena that science cannot explain." The show actually *started* with a disavowal of science. The dramatic narration asked what could be the cause of these mutilations: "Is it the hallmark of extraterrestrial visitors or a secret government operation racing to contain an urgent threat?"

No mention of the predator-scavenger theory was even made until nearly five minutes in, and prior to that every attempt was made to undermine logic and reason. Photos of mutilated livestock—which look like pictures of decomposing animals—were flashed on the screen while the narrator droned on about the commonalities of the phenomena: the animals seem to have been drained of their blood, and their eyes, ears, and tongues have been "removed" with laser-like precision. Additionally, internal organs have been "removed" without incisions.

Almost immediately the viewer is led to believe that these "mutilations" can't possibly be the work of anything natural; there is just no way that decomposition, disease, or other animals could ever account for missing eyes, organs, or blood—the eyewitnesses and experts aren't buying it, so neither should the viewer.

Most of the people interviewed during the segment seemed to exhibit a serious lack of scientific and critical-thinking skills. More time was devoted to the outlandish theories, while the most reasonable and plausible explanation seems to have been edited out.

In fact, the only actual *expert* on the show, Truman Smith, a Colorado veterinarian, is featured onscreen for *thirty seconds*. In that all-too-brief time, he explains the "mutilations" are the work of predators. His testimony is immediately followed by the narration: "Smith is convinced mutilations are made by animals, but others disagree."

In fact, the only actual *expert* on the show, Truman Smith, a Colorado veterinarian, is featured onscreen for *thirty seconds*. In that all-too-brief time, he explains the "mutilations" are the work of predators.

What could a silly, old veterinarian know about animals? He doesn't know what he's talking about, but the paranormal "investigators" and "experts" do. They can explain what a mere animal specialist cannot.

Of the three paranormal experts featured, the one onscreen the most is—you guessed it—the man who backs the theory that "the cow blood is being used for hybrid fertilization—alien hybrids." He even goes so far as to cross-reference UFO sightings and cattle mutilations on a map. The mutilations and UFO sightings create a pattern, so that *must* be the answer.

An ex-sheriff eyewitness—shown with nasal cannula—discusses an "encounter" that occurred "a few years back." Shortly after responding to a police call about mutilated livestock, he claims "a bright orange light came up—about the size of a beach ball," which then split into two separate, identical lights.

Eyewitness accounts often add compelling and dramatic credibility to stories, especially when they come from a former sheriff, but his story contains many flaws. Absent is any mention of weather conditions or the possibility that he actually saw a distorted reflection of car lights.

Also absent is any mention of his illness or how long he's had it. His nose tubes tell us he is probably on oxygen to treat a respiratory ailment. *Hallucinations* are one of the side effects caused by having too much—or too little—oxygen in the blood. Without any mention of these important issues his credibility vanishes like the cow's blood.

After the UFO/extraterrestrial theory is discussed heavily, they introduce a rancher who claims to have seen silent, black helicopters around the time two of her horses had been "mutilated." While the black helicopter theory certainly makes more sense than little green geneticists, it still leaves too many unanswered questions.

The black helicopter theory concerns BSE (bovine spongiform encephalopathy) or as it's commonly known: mad cow disease. Could it be possible that the deadly prion—which can lay dormant for many years—is still in the livestock population? If so, then these mutilations are the end result of secret government tests. Government agents swoop down at night from silent, black helicopters and take samples of the livestock—which causes the "mutilated" appearance.

It is certainly possible that BSE could be present in the U.S.—or foreign—cattle populations and the disease can be passed onto humans. In fact, the

human form of BSE, Creutzfeldt-Jakob disease (CJD), can occur either sporadically—*without* exposure—or through infection.

If that isn't frightening enough, shortly *after* the episode aired, reports of a potential CJD outbreak began to emerge after a patient who supposedly had a sporadic form of the disease underwent neurosurgery in a New Hampshire hospital. It is estimated that fifteen other patients in different New England states may have been potentially infected through the use of shared equipment. (Prions cannot be eradicated through standard sterilization methods.)

While this recent scare is obviously not mentioned in the episode, it could lend more credibility to the black helicopter theory. Yet there are some very important questions that need to be considered: if these "mutilations" are secret operatives done to test for BSE, wouldn't it make more sense for the government to simply come to the farm and take the animals? Wouldn't late night raids be more costly and ultimately create more fear and suspicion? Also, since this theory focuses on the potential contamination in the human food chain, why would horses be targets? These very important questions are of course not explored.

The segment ends without any actual conclusions or solid answers. The narrator reviews the three theories. "Whether they are predators . . ." he begins, followed immediately by a statement from the lady who lost her horses: "Definitely, it was no predator." The more reasonable of the paranormal investigators says, "I think the alien answer is probably the least likely explanation." Even this is followed up with a narration that the "mystery continues to burn."

With the huge growth spurt in the acceptance, belief, and interest in the paranormal, an unsolved mystery is sure to make for good ratings, but the cost of that is an exponential increase in biased and unscientific ideas and theories. That is the greatest shame of all. Science has no fear of the paranormal community, while much of the paranormal community seemingly avoids and cowers in fear from science.

During my lifelong interest in the paranormal I have seen different ideas and concepts suddenly spring to life or get debunked and die. It has been an enjoyable and educational process, one that has endowed me with healthy skepticism and a greater passion and hunger for knowledge and discovery. After all, mysteries are *meant* to be solved.

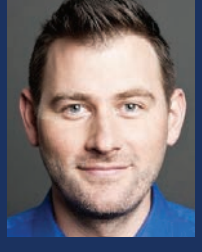
That is the joy of the "unexplained," and a program on The Science Channel should reflect science, logic, and reason. The program failed most miserably in that respect. Worse still is what it did well: it cleverly and sneakily led viewers to a single conclusion. The last thing we need is another biased, sensationalistic show that is so heavily propagandized that it would make Leni Riefenstahl proud. ■

Stephanie Kemmerer is a novelist, freelance journalist, and cocreator of Toothy McFadden, an Internet-based comic character. She lives in Bethlehem, Pennsylvania.

The Wait is Over: CFI Unveils New *Point of Inquiry* Team!

POINT OF INQUIRY
WITH JOSH ZEPPS & LINDSAY BEYERSTEIN

***Point of Inquiry* is back with an all-new team.** For in-depth interviews with the most fascinating minds in science, religion, and politics, join cohosts Lindsay Beyerstein and Josh Zepps at pointofinquiry.org.



Josh Zepps (cohost) is a new media pioneer; a journalist serving as a founding host and producer at the online talk network HuffPost Live, following hosting stints with such outlets as Bloomberg TV, the Discovery Channel, and as an anchor for CBS's Peabody Award-winning *Channel One News*.

Lindsay Beyerstein (cohost) is an award-winning investigative journalist and staff writer for *In These Times*. Her work has appeared in places such as *The New Republic, Reuters, Slate, Salon, Ms. Magazine*, and *The New York Press*. Wait to see what stories she tells with her guests on Point of Inquiry.

Bears as Bigfoot | Truth | Sirius Matter | Leonardo Mysteries | Balles Prize | Creation Astronomy | Dr. Oz
Skeptical Inquirer
THE MAGAZINE FOR SCIENCE AND REASON
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Stardust, Smoke and Mirrors
The Myth of the Mad Genius
SYLVIA BROWNE'S PSYCHIC FAILURES: Why Does Anyone Believe Her?
Has Global Warming Stopped?
News and ESP Belief
Lost Lessons of the Strangling Angel
Electrocuting Parasites
Published by the Committee for Skeptical Inquiry

Myth of the Mad Genius

I wonder what cloud Dr. Schlesinger is on or what she has been smoking! ("Stardust, Smoke, and Mirrors: The Myth of the Mad Genius," SI, September/October 2013). She will no doubt say it is unethical to speculate, but how else to explain this polemical diatribe that is arrogant (references only herself to support her thesis), disdainful ("common ignorance," "mythers"), mean (belittles Kay Jamieson and Iowa Writers Workshop attendees), denigrating ("the nation's shrink"), irrelevant (Charles Darwin), distorted (schizophrenia and bipolar have specific biological abnormalities; DSM-5 was overwhelmingly approved including by NIMH's director with minor changes from DSM IV) and hypocritical ("remote assessment" unethical but five people named with supposed tertiary syphilis)?

Dr. Schlesinger finds some real inadequacies of selected studies (and some not real: Kay Jamieson's British artists were not hand-picked or acquaintances), but there are many more studies. She does not give any evidence that creativity is *not* linked with mental disorder. Of course if she doubts "whether mental illness—including bipolar disorder—exists at all" and if she cannot "reliably identify" creativity, how can she ever show they are *not* related. She can't and she doesn't.

Rather than "diminishing the bright stars," a search for evidence of mental disorder helps us better understand and appreciate them and mental illness, and, in my experience, helps and gives hope to those who suffer from mental illness and their families.

Nigel Bark, MD
Associate Professor of Clinical Psychiatry
Albert Einstein College of Medicine
Bronx, New York

Judith Schlesinger replies:

No amount of personal attack can alter the basic fact that the "mad genius" notion is based on conjecture rather than science. There is still no biological marker for "madness," and without any diseased tissue, blood, or laboratory test to confirm its presence, the diagnosis continues to turn on subjective observation of behavior (which is even more attenuated when the person in question has been dead for centuries). This is also true of "creativity," which moreover has no universal definition. It is therefore impossible to make a genuine empirical connection between the two concepts; again, it's like trying to get cubes of jello to stick together. But the linkage remains popular, sustained by the familiar myth-making devices of dogmatic wagon-circling, reliance on a few exaggerated but unexamined claims, and the plain romance of the idea.

Anti-Vaccination Lies Go Way Back

I read "Lost Lessons of the Strangling Angel" (SI, September/October 2013) with great interest. The author quotes Hannah Allen's *Don't Get Stuck!* (1985) as follows: "Vaccination was made compulsory [in Germany] at the beginning of the Second World War; and the diphtheria rate soared up to 150,000 cases, while in unvaccinated Norway there were only 50 cases."

I think the source for Allen must have been another book, namely *The Poisoned Needle: Suppressed Facts About Vaccination* (1957) by Eleanor McBean. The integral text of this book can be found on several antivaccination sites, and the Google Books version has on the bottom of page 19 almost exactly the same sentence: "At the beginning of the Second World War immunization was made compulsory in Germany and the diphtheria rate soared up to 150,000 cases (1939) while in unvaccinated Norway there were only 50 cases." The same Eleanor McBean wrote a forty-six-page booklet *Vaccinations Do Not Protect* (1980) in which the same claim (often slightly differently phrased) is stated on page 8. Numerous websites quote that page number from a 1991 reprint. That may also have been the source for Allen.

Apparently the anti-vaccinationists' habit of parroting each other's lies predates the Internet.

Actually McBean's data for 1939 can be found back in a *Eurosurveillance* report[1], which states that in 1939 there were 143,485 cases in Germany and 71 in Norway. For the next year, 1940, the numbers are 138,397 and 149. It is unclear where Allen's 40,000 comes from; she may have meant 140,000. Sloppiness is rife in those circles. The lie of McBean is the suggestion that the introduction of compulsory immunization for fourteen-year-olds instantly immunizes the whole country.

1. A. Galazka and J. Tomaszunas-Blaszczy. 1997. Why do adults contract diphtheria? *Eurosurveillance* 2(8) (August 1). Online at http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=127, accessed August 27, 2013. Almost the same data can be obtained from the Office of Medical History, U.S. Army Medical Department, Preventive Medicine in World War II (1958), more specifically http://history.amedd.army.mil/booksdocs/wwii/PM4/CH10.Diphtheria.htm.

Jan Willem Nienhuys
Waalre, the Netherlands.

Sylvia Browne

Shaffer argues that Sylvia Brown was "wrong" when she said in a 2004 interview that the kidnapper of Amanda Berry was "short" ("The Psychic Defective Revisited," SI, September/October 2013). Shaffer argues that Castro was not short because at five foot five inches he was only two inches shorter than the average Hispanic male. However, even if the average Hispanic male were only five feet tall, Castro would

still be short. Castro is the same height as Peter Lorre, who was famously short, or Johnny Galecki of the TV show *The Big Bang Theory*. I think Shaffer has to give this one to Browne and question his own objectivity.

Randall Osczevski
Newmarket, Ontario Canada

Zapping

Thomas Patterson's article on the pseudoscience of "Parasite Zappers" ("Electrocuting Parasites: Cutting Edge Pseudoscientific Technology," SI, September/October 2013) was interesting and informative. To the extent I understand biology and physiology, I certainly agree with his comments. I especially liked his "drowsy" white blood cell comment.

However, authors should be careful to limit their comments to their own field. Patterson errs in his electrical analysis of the device (and of his electric fly swatter). To address the latter first, circuitry in the fly swatter converts the nine volts of the battery to a very high voltage (in the tens of thousands of volts) to effect the electrocution of insects. Patterson's comments on his tests with his body and the battery make no sense, technically. Voltage is a potential difference; its gravity analog is altitude. Patterson's statement that "nine volts went in but none came out" is equivalent to saying that a high mountain has 10,000 feet at the top but none comes out at the base. What he meant, I presume, is that the resistance of his body prevented much current flow with only a nine-volt potential difference behind it. In any case the current would not be measured by a voltmeter.

Richard A. Scholl
Gordes, France

Thomas Patterson replies:

You are right. My point was to simplify the idea that the voltage and current produced by this little black box would not kill a parasite living deep in the human body. I did not want to get too deep into the relationship of voltage, current, and resistance because space in these types of articles is very, very, limited.

Bigfoot Lookalikes

Joe Nickell's article "Bigfoot Lookalikes: Tracking Hairy Man-Beasts" (SI, September/October 2013) was very informative but also terribly incomplete in its comparison of Bigfoots (aka Bigfooten) to bears. Let me fill in some vital data on the habits of Bigfootses (Bigfootians).

During my own in-depth research (which consists solely of watching clips from the show *Finding Bigfoot* on *The Soup*) I have noticed that Bigfoot trackers are consistently confident that putting out snack foods is a good way to attract Bigfeet (Bigfooti). If our intrepid and daring Bigfoot seekers describe Bigfoot as being attracted by human junk food, then I am completely willing to take their word for it—and also to believe that the creature they hope to find is even more similar to a bear than Nickell suggests. Bears just love Snacky Kakes and Cheezy Poofs—enough so that I hope the "trackers" involved don't stay too close to the bait in areas where bears are known to forage.

The tentative conclusion of my personal pilot research project is that a Bigfoot is in fact an animal that looks, acts, and in every possible way is identical to a wild bear, and yet somehow isn't one. Obviously, I need to do more research. Someone pass me the remote and the Cheezy Poofs.

Jennifer McIlwee Myers
Fullerton, California

Joe Nickell's article "Bigfoot Lookalikes: Tracking Hairy Man-Beasts" has spurred me to share my own story regarding a potential Bigfoot lookalike. Last May, my wife and I were returning home after dropping off my daughter at a Girl Scout camp on nearby Mount Charleston. We had seen wild horses, burros, and deer on the trip up the mountain, so I was being cautious driving down at night. On a long, straight stretch of road, I turned off my brights as a motorcycle passed by. My eyes left the road for only an instant, but as I looked forward, I was shocked to see a large, hairy, apparently two-legged animal standing in the road. I swerved just in time to keep the animal from hitting the windshield on my wife's side. Hitting it would have been a disaster for us, and my knees were literally shaking for a few miles. Upon discussing the event with my wife, we agreed that it was too tall to have been a deer or burro, and it lacked a noticeable tail. We also had both briefly seen a partner with antlers standing just off the side of the road. I believe that the animal was an elk facing away from us. But at that moment, it really felt like I was going to hit a large hairy man.

William R. Fouts
Las Vegas, Nevada

I wonder if the many Bigfoot stories in Joe Nickell's files include the story of the white apes of Mt. St. Helens.

I heard the white ape story when I was counseling at a Girl Scout camp in southwest Washington in 1957–1958. I heard the story several times but never learned how to tell it. It was told only to the older girls (thirteen and fourteen year olds), never to Brownies. It was always told as the last fireside story before Taps. The counselor telling the story would pretend reluctance, beginning hesitantly, "The fellow who tells this story swears it's true. Of course, he's been in an insane asylum for the last fifteen years, but . . . (shrug) . . . he swears it's true."

The teller describes how three deer hunters camped on the east side of Mt. St. Helens, then a remote area. As they lay in their sleeping bags, a group of white apes came and spent most of the night dancing, leaping, and whooping around the terrified hunters, leaving only at daybreak. In the morning two of the hunters had died of fright, and the third, as mentioned above, had lost his mind.

There used to be a rock-climbing club in Longview-Kelso-Castle Rock, west of Mt. St. Helens, called the White Apes. I speculate that they called themselves white because of their light Swedish-Finnish complexions and apes to brag about their climbing ability.

There is a canyon on the southeast side of Mt. St. Helens called Ape Canyon. A Forest Service employee told me the canyon was named after the climbing club, not the tall tale. I have been there twice, once on a summer backpack and once on a mid-winter cross-country ski trip. I saw no apes, bears, or anything frightening. I expect the canyon is still there, as the ejecta from the 1983 eruption went mostly north.

Alcie Anderson
Las Cruces, New Mexico

Nickell refers to an early possible Sasquatch footprint in the snow found by David Thompson in Jasper, Alberta. I wonder if the argument that it could have been a bear footprint is compromised by bears typically hibernating when snow is on the ground?

Raymond Briggs
Grants Pass, Oregon

Joe Nickell replies:

Thanks to Myers for her humor, to Anderson for what is clearly an example of campfire jokelore, and to Fouts for his reminder that bears are not the only Bigfoot lookalikes. I would remind Briggs of the principle of Occam's razor. Even if the Thompson "Sasquatch" track were

actually made in winter (there is perpetual snow in the mountains), bears do not actually "hibernate" (according to the National Audubon Society Field Guide to North American Mammals, *2004). They do den, and they may be found "either at den sites or in dens" for as little as two months, depending on climate conditions. ("In subtropical Florida some black bears do not den." See S. Herrero,* Bear Attacks, *2002.) Remember that Thompson's tracks had un-Bigfootlike claw marks and that he himself thought it likely "the track of a large old grizzled bear." Did I mention Occam's razor?*

Dr. Oz the Shill

As bad as Dr. Oz shilling for the weight loss industry ("Dr. Oz's Questionable Wizardry," SI, September/October 2013), the last straw for me was when he had a psychic on the program. He said he wanted to give relief to those who had lost loved ones. This is a man of science?

John Kepler
San Luis Obispo,California

Author Joe Schwarcz replies:

Yeah . . . and then he promoted "Dr. Oz's Homeopathic Starter Kit." That was the end for me.

Leonardo Painting

I am a new admirer of the Skeptical Inquirer magazine. I greatly enjoyed the most recent issue, and having recently graduated with a bachelor's degree in fine art, I was particularly delighted by the articles written by Massimo Polidoro and Judith Schlesinger. That being said, I did notice that Mr. Polidoro's analysis of Leonardo da Vinci's *Virgin of the Rocks* was accompanied by an image of *Leda and the Swan.* I am fairly certain that a painting of the Virgin in nude contrapposto being molested by Zeus in swan form would have resulted in Leonardo's excommunication. Apart from that, the article itself was very well composed and I look forward to the next issue.

Hannah Carroll
fustercluck1@gmail.com

The painting captioned as Leonardo's "Virgin of the Rocks" in "The Mysteries of Leonardo" is clearly one of Leda and the swan, the form taken by Zeus when he seduced Leda in Greek mythology. "The Virgin of the Rocks" exists in two versions, one in the National Gallery in London and one in the Louvre in Paris.

John Gee
Singapore

Obesity Redux

In his response to readers' comments, Kenneth W. Krause used nearly half his space to repeat the evidence for the correlation between obesity and disease. But nobody denies the correlation. The dispute is over causation. Correlation doesn't equal causation. A third factor, such as psychological stress, could be causing both obesity and disease. Restating the case for correlation seems like the straw man fallacy to me.

It's plausible that the obesity epidemic is largely caused by the increased psychological stress caused by the economic pressure on the working class that started around the same time as the epidemic. This would also explain the correlation between obesity and poverty.

There's also the issue of the actual consequences of medical advice. Even if obesity does cause disease, it doesn't follow that pressuring fat people to lose weight will improve their health. We know that "yo-yo dieting" is more harmful than obesity, and we know that most people who try to lose weight will yo-yo, so why are doctors telling people to lose weight?

We need to address the psychological, environmental, and economic reasons people are getting fatter and sicker. Focusing on "personal responsibility" and defending "legitimate businesses" will not help the situation.

R. Allen Gilliam
Winter Park, Florida

Kenneth W. Krause replies:

Doctors tell people to lose weight because, by definition, that's what obese and overweight people need to do. Certain others seem to believe that silence has magical powers, and perhaps that the obesity problem will simply disappear if we ignore it. And I don't know of any doctor, dietician, or personal trainer who has ever advised a patient or client to go on a "yo-yo" diet. To the contrary, real solutions include education, experimentation, and committed lifestyle changes.

Difficult? Of course, but not impossible, as some would apparently have us believe. One reader suggested to me that failure often leads to deep resentment. Concerned professionals can't pull people away from their television sets and computer screens, or force them to exercise properly and eat normally. They can only offer information and encouragement. The frustrated and angry don't have to appreciate their efforts, I suppose, but I hope they don't feel compelled by spite to undermine them either.

In his article, Krause presents Marlene Zuk's anti-paleo opinions as if they're facts, and he gives no alternative viewpoints. This is a surprising lack of scholarship on Krause's part. Zuk is hardly a credible source; at one point in her book she declares that because crickets can evolve rapidly, that proves that people can evolve rapidly, apparently being unaware that there is a big difference between crickets and people.

If you'd like to read a pro-paleo article written by a professor who knows what he's talking about, I recommend Jared Diamond's essay "The Worst Mistake in the History of the Human Race."

Unlike Zuk's overpriced book, Diamond's essay is available online for free.

George Buford
St. Peters, Missouri

Pseudomedicine in the Military

Dr. Harriet Hall's critique of acupuncture invading the U.S. Military Medical Services ("Down the Garden Path: Faulty Thinking and Self-Delusion," SI, July/August 2013) reminds me of a parallel infiltration of the Military Mental Health branch: the touting of Eye Movement Desensitization and Reprocessing (EMDR) therapy to treat service members with posttraumatic stress disorder (PTSD). Aside from the nonspecific effects of low arousal, focused attention, and interpersonal rapport, EMDR suffers from the same placebo problems as acupuncture.

Yet—your tax dollars at work!—overzealous military psychologists are trumpeting this technique as a "safe and effective" treatment to get PTSD sufferers back in service as quickly as possible. Would a military commander base the safety and effectiveness of a new fighter jet on the same level of empirical sloppiness that is applied to assessing the effects of not-yet-validated medical and mental health treatments of our soldiers? If you want to pay someone to stick pins in your butt or waggle their fingers in front of your nose, fine. But to conscript our dedicated service men and women into unwilling guinea pigs for somebody's pet pseudoscience project is the ultimate disrespect.

Laurence Miller, PhD
Royal Palm Medical Center
Boca Raton, Florida

Books on Bayes

I agreed with most of what Paul G. Brown wrote about in his review in SI in the July/August 2013 issue of Nate Silver's book *The Signal and the Noise*. In the first paragraph of Mr. Brown's review he wrote that "there are better books out there on the subject" referring to the subject of Bayesian reasoning.

I have yet to find another book written at the layperson's level about Bayesian reasoning, so I would appreciate if Mr. Brown could suggest some other books about this fascinating subject.

Larry Lesyna
lesyna@cox.net

Paul Brown replies:

I'm getting this question quite a bit. So I've composed a reply.

Sharon Bertsch McGrayne's recent book The Theory That Would Not Die *is a good introduction to Bayes with particular emphasis on the broad range of problems to which it has been applied, even if the book's a bit encumbered by gossipy asides and mild exaggeration about mid-century academic infighting. The book isn't very technical, but it does a better job than* Signal and the Noise *of giving the reader a solid intuition about how Bayes works (special emphasis on priors, updating, and when to apply Bayes). The book wasn't written by an eminence like Nate Silver, but by an experienced academic writer with a flair for popular science.*

In between the popular science and the more technical books there really isn't much. Bayes is usually dealt with in a chapter or two of popular books on probability theory—Leonard Mlodinow's wonderful The Drunkard's Walk: How Randomness Rules Our Lives, *or the more financially focused* Against the Gods: The Remarkable Story of Risk *by Peter Bernstein. I actually feel that these books just about give Bayes's Theorem appropriate weighting as part of a much broader river of thought connected to reasoning about probability. Understanding the power of repeatedly updating your priors is a powerful idea, but it's one of a long list of mathematical tools everyone would be better off knowing. Other than that, I can thoroughly recommend the blog http://lesswrong.com. Hit the site, search on "Bayes," and lose yourself for as long as you like in more or less gory details about Bayesian theory and practical applications. Occasionally, one of the field's deities shows up in the comments sections, which is terrific fun.*

If you're in the market for something detailed, technical, and penciled-yellow-stickies-everywhere worthy, the best (and most expensive…welcome to the world of academic textbooks) in my opinion is Berger's Statistical Decision Theory and Bayesian Analysis. *Again, I like it because it contains both a thorough coverage of Bayes while at the same time placing it into an appropriate context.*

I hope this list satisfies your curious readers.

Russian Conspiracy Theories

I enjoyed reading the piece on the Chelyabinsk meteor event by David Morrison et al. ("The Chlyabinsk Event of February 15, 2013," SI, July/August 2013), especially the statistical analysis regarding the coincidence of unlikely happenings, but their assertion that "there seem to be few suggestions that this was an unnatural event such as a UFO, or the product of some secret weapons system" is, sadly, not entirely accurate.

On the day of the occurrence, the notably nutty Russian lawmaker Vladimir Zhirinovsky proclaimed to journalists, "Those aren't meteors falling, it's the Americans testing new weapons" (http://en.rian.ru/russia/20130215/179489080/Russian-Politician-Denies-Meteorite-Claims-US-Weapons-Tests.html).

Perhaps of more concern than a rogue politician is a nonscientific survey taken by Moscow daily newspaper *Noviye Izvestia* a week after the meteor fell that showed almost half its readers refused to believe the truth of the matter, instead favoring military exercises, alien spacecraft, or even a message from God (http://www.csmonitor.com/World/Europe/2013/0222/Was-Chelyabinsk-meteor-actually-a-meteor-Many-Russians-don-t-think-so.-video).

Old habits die hard, and conspiracy theory seems to be woven into the national fabric of the former Soviet republic.

Russ Dobler
Monroe, New York

Experience and Illusion

At least three articles in the July/August SI made reference to the maxim that while personal experience might be quite an effective method for gathering evidence, it is a very poor (and potentially misleading) basis for drawing a conclusion.

This reminded me of a story my father once told me. He was a distinguished marathon cyclist as a young man, and one of the training runs that he and his fellows used included a stretch of road in the countryside where there was a slight uphill stretch where the riders could cease pedaling and simply "coast" up the hill, seemingly defying gravity.

They all knew of course (they weren't fools) that they were immersed in an optical illusion and that the hill that looked like it was going "up" was actually going down. This did not diminish my father's relish of the memory, and he stressed the amazement and sensory bafflement that the experience provided. He had that faraway look and smile that people get when they "can still see" an event from long ago—so the optical illusion was obviously overwhelmingly convincing; probably because my father and his mates were "within" it rather than just viewing it.

The two main factors creating the illusion were:

1) A downhill section of road changed its gradient into a section that, while still going downhill, was less steep; thus creating the illusion of a "dip" followed by a rise.

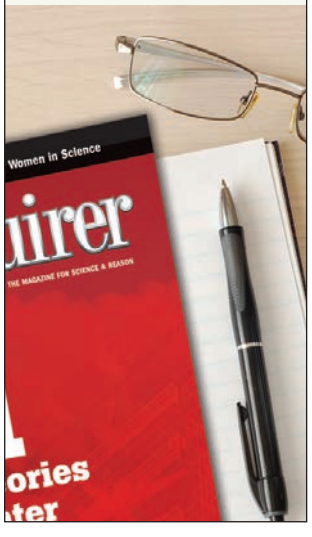
2) The lack of a horizon due to the closely wooded area and nearby rolling countryside.

You can see this optical illusion for yourself on YouTube (do a Google search for "cars roll uphill" or go to http://www.youtube.com/watch?v=rNL-GEzSn-BM) and it is a perfect example of how personal experience can be very misleading—although the glint of wonderment that I remember in my father's eye testifies that it can at least bring joy.

Robert T. Walker
Wagga Wagga
NSW, Australia

[FEEDBACK

The letters column is a forum on matters raised in previous issues. **Letters should be no longer than 225 words**. Due to the volume of letters we receive, not all can be published. Send letters as email text (not attachments) to letters@csicop.org. In the subject line, provide your surname and informative identification, e.g.: "Smith Letter on Jones evolution article." Include your name and address at the end of the letter. You may also mail your letter to the editor to 944 Deer Dr. NE, Albuquerque, NM 87122.



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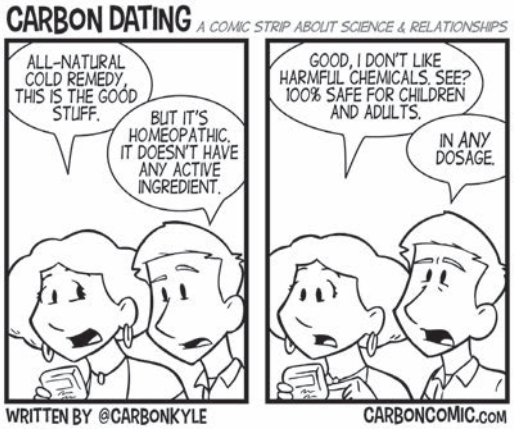
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SKEPTICAL ANNIVERSARIES

by Tim Farley

January 3, 1804: An armed citizen on security patrol shot to death a painter clad in white in the Hammersmith area of London, thinking he was a ghost that had been reported in the area. This "Hammersmith ghost murder" case raised legal issues that were not resolved under British law for 180 years.

January 9, 1969: The Condon Report on UFOs, commissioned by the US Air Force, was released to the public.

January 13, 1404: The Act Against Multipliers made the use of alchemy to create gold or silver illegal in England.

February 5, 1969: A US Federal Appeals court ruled that Scientology's E-meters are not a banned medical device (as held by the FDA since 1963) but part of that religion protected by the First Amendment.

February 5, 1999: A confidential Discovery Institute strategy memo now known as the "Wedge document" was leaked to the public.

February 6, 1999: The first Skeptics in the Pub was held in London. CSI Fellow Wendy M. Grossman gave a talk titled "My Life as a Skeptic."

February 10, 1964: The *Outer Limits* episode "The Bellero Shield" first aired, two weeks before alleged UFO abductee Barney Hill underwent hypnosis. Skeptics later theorized the depiction of aliens in the program influenced Hill's testimony under hypnosis.

February 12, 1949: An adaptation of Orson Welles's "War of the Worlds" radio broadcast caused panic in Quito, Ecuador, resulting in property damage and six deaths.

February 16, 1989: *Nature* published "Radiocarbon Dating of the Shroud of Turin," which concluded that the fabric dated from medieval times.

February 22, 2004: *The Sunday Times of London* published the results of Brian Deer's investigation of Andrew Wakefield's 1998 MMR study. *The Lancet* published a partial retraction of the paper the next month, fully retracting it in 2010.

February 25, 1974: Carl Sagan and Immanuel Velikovsky face each other in San Francisco at a symposium on Velikovsky's theories sponsored by the American Association for the Advancement of Science.

Tim Farley is a research fellow with the James Randi Educational Foundation and created the website whatstheharm.net.

MYSTERY SOLVED
THE COLONEL
KENSINGTON
INCREDIBLE, AREN'T THEY, KENSINGTON?
THE PEOPLE WHO SHAPED THESE MEGALITHS MUST HAVE HAD EXTRAORDINARY IMAGINATIONS.
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MILO KATSOPOLIS
YES...?
DON'T YOU KNOW ABOUT THE ANTEDILUVIAN ASTROMEN?
NOOOO...?
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The organizations listed above have aims similar to those of the Committee for Skeptical Inquiry but are independent and autonomous. Representatives of these organizations cannot speak on behalf of CSI. Please send updates to Barry Karr, P.O. Box 703, Amherst NY 14226-0703.
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